

CHRYSANTHEMUM

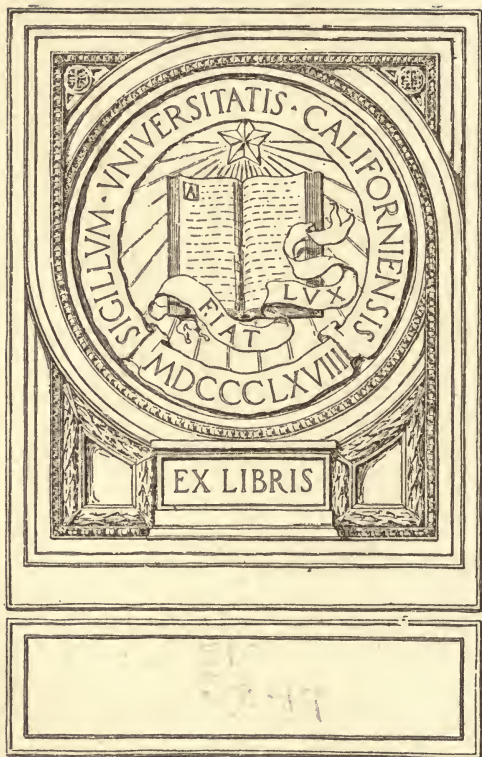
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GARDEN FLOWERS IN COLOR





GARDEN FLOWERS
IN COLOR

EDITED BY
R. HOOPER PEARSON
MANAGING EDITOR
OF THE *GARDENERS'*
CHRONICLE.

PLATE I (*Frontispiece*)

TYPES OF SINGLE FLOWERS

Brightness. A very useful flower for decorative purposes.

Merstham Jewel. This variety forms a splendid bush. Each shoot should be disbudded to one flower.

Herbert Williams. One of the most delightful single Chrysanthemums.

Mensa. This flower resembles the variety Mary Anderson in form, but it is larger, and the florets possess greater substance than the older variety.





Chrysanthemums

By
Thomas Stevenson
With Chapters By
C. Harman Payne and
Charles E. Shea

*With Eight Coloured
Plates*



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TO VINO
ALBONIAO

PREFACE

WHAT the Narcissus is in the bright Spring-time, what the Rose is in the full Summer, so is the Chrysanthemum in that later time when shortening days and lessening heat speak to us of the waning of the floral year.

The three are Sister-Queens of the World of Flowers to most of us, and, were we told that we could have but one of them, many would say leave to us the Chrysanthemum. Leave it with us for its length of blooming time; leave it with us because it leads us kindly through those later months when Autumn is to give place to Winter, and floral Nature is to fall into its yearly sleep.

These three flowers—the Narcissus, the Rose, and the Chrysanthemum—what emblems of our human life! Bright youth, with all before us, and no cloud to dim the Sky—the Narcissus. Maturity and power—the Rose. And, then, through the more sober and perhaps sadder period of later life, when sometimes a strong faith is needed to make us realise that the gathering clouds have still a silver lining, and that there remains behind them a sun which may yet shine for us—our floral help and comforter—the Chrysanthemum.

The Chrysanthemum is a flower of great antiquity: in the character of a flower carefully cultivated and systematically improved, probably the oldest of all flowers. Over 2000 years ago, as the late Baron Kamura once

assured me, and before the Imperial Show was instituted, Japan held its well-ordered Chrysanthemum Shows; as 2000 years ago, exactly, the great Chinese Encyclopædia was commenced, and is still continued yearly under the management of a State Committee which was first created 2000 years ago. What a very modern Nation we English people are.

The Chrysanthemum: *par excellence* "the peoples' flower"—the flower of all of us, from palace to cottage, and to workshop; dearly loved, and well cultivated too, by our East End workers, as they demonstrate to us each year at their "Peoples' Palace" Chrysanthemum Shows.

And there have, in the long years of its existence, been vast changes both in the character and the uses of this flower; and how greatly the conditions of competitive exhibitions have been altered! A generation ago, when the really good new varieties came to us yearly in a bare half dozen, it was of paramount necessity, if one could hope to conquer at the Exhibitions, to search into the inmost character of each new arrival, and by understanding it to win our laurels. Now, with the yearly arrival of literally hundreds of really good new varieties the basis of success has somewhat changed, and the "power of the purse" to acquire these new varieties has received an added potency. Still the necessity for skilful cultivation yet fortunately remains for us.

And there have succeeded to each other vast changes in the popular taste for this or that section of the flower. The ever-widening understanding of the varied uses of the Chrysanthemum has led to the inevitable result that the popular appreciation of the flower in its decorative aspect has in a measure dwarfed the other aspect—that

of exhibition. So has it been with the Rose, to the great advantage of the lovers of that flower, which to-day stands on the broad basis of popular esteem. And yet one must not minimise, or depreciate, the great service which the Exhibitors have in each section, Rose and Chrysanthemum, rendered for their favourite flower, for it has been the Exhibitor who, by his energy and special knowledge, has provided the stimulus and motive power which have led to the higher development and still greater beauty of those floral gems which now bewitch the eye. Were there no Exhibitions it is greatly to be feared that there would be comparative stagnation.

Of late years there has been raised the cry of the decline of the big Chrysanthemum. It may be so, but I doubt that it is more than a passing phase of taste due somewhat to method of exhibition, or some such cause; but, while to the majority of us the smaller blooms lend themselves more readily to decoration, we cannot do without the glories of the big blooms—in their place.

And for decorative purposes how great the increased appreciation of the single varieties of the Chrysanthemum. *Vox populi vox Dei* in this as in many things, and on this question the popular voice speaks with no uncertain sound. But whatever the possible relative decline, or advance, of this or that section of our flower, this we know full well, that there can be no decline in our love for that flower of flowers, the Queen Chrysanthemum—and that although its uses may vary from time to time the Flower itself can never know decline.

CHARLES E. SHEA.

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CHRYSANTHEMUMS

INTRODUCTION

By THOMAS STEVENSON

THE Chrysanthemum must always occupy a prominent position in gardens, if only because it commences to flower at a season when many other classes of plants are beginning to lose their summer beauty. But there are other points to the credit of Chrysanthemums, namely, the ease with which they are grown and the long season over which the flowers last, a period which extends from August until February.

It would be difficult to imagine a flower that could challenge the position our Autumn Queen now holds at any time between the two dates named. This much may be said, although the cultivators of Perpetual-flowering Carnations claim that their favourites will cause Chrysanthemums to be grown less frequently—a claim that will not be realised in the near future.

The Carnation has many virtues, but it cannot hold its head up (without support) during the dull days of an English winter, even when cultivated in ideal houses, whereas the Chrysanthemum succeeds in making a show in conditions far from the best, and it is so hardy that it

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is the one flower that the small amateur grower may cultivate without much difficulty.

In most gardens Chrysanthemums contribute the principal supply of cut flowers during winter. Other less distinguished and often more troublesome flowers supplement the harvest of Chrysanthemums, but these latter are depended upon to brighten all winter decorations, and right well they do it.

For market purposes they are cultivated by hundreds of thousands. If we knew the exact numbers and the acreage they cover both indoors and out of doors, and the number of hands engaged in their cultivation, we should better realise the fact that the Chrysanthemum-growing industry is unequalled by any individual flower cultivated in this country.

Since its introduction into Britain the flower has undergone many changes. In my earliest recollection very many of the varieties grown were of the Incurved and Reflexed types, and for decorative purposes they were used very largely, but latterly the Japanese section has made great strides both as regards size and form of flower and the habit of the plant generally. My first serious experience with Exhibition varieties was gained when Mdme. Clémence Audiguier, Thunberg, Comte de Germiny, Triomphe de la rue des Châtelets, Belle Paule, Meg Merrilies, Jeanne Delaux, Fair Maid of Guernsey, and such varieties were amongst the most popular sorts, and a great treat it was taking these tall-growing varieties (all naturally grown) some 10 or 11 miles by road in open wagons for the purpose of arranging a group. What a contrast is presented when these are compared with the best of the present-day Japanese varieties, for many of

these latter do not exceed 4 feet in height when grown as strongly as possible during the whole season, say, from December to November, or when rooted late on purpose for grouping they do not even exceed 2 feet 6 inches, pot included. These facts will remind us that as growers of Exhibition Japanese Chrysanthemums we have not the same difficulties to meet as our predecessors encountered twenty-five years ago.

There are many who seem to think that the Japanese varieties are losing some of the appreciation they have enjoyed, and that the single-flowered varieties will succeed them to some extent. I do not share this feeling, although there is no disposition to depreciate the great progress that is being made with the single varieties. Many of these latter are very bright and beautiful, and as decorative flowers are nearly all that can be desired, but they have not the keeping qualities of a really good decorative Japanese, nor can they be packed and sent by rail so well. What is more important from the market-grower's point of view, they do not sell so easily, a few boxes each morning being all that most growers can get rid of to advantage, and these must be blooms of the first quality obtained by rigid disbudding. The Reflexed, Anemone, and Pompon flowers have nearly all disappeared from general cultivation, and, with the exception of a very few of the more delicately coloured Pompons and Anemone Pompons which possess uncommon decorative qualities, there is no need to mourn them, for their places are amply filled by the single flowers and by the many fine varieties of the Japanese type.

The Incurveds, so popular twenty years ago, have certainly depreciated in the public estimation, particularly

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as exhibition flowers, though some few of them are exceedingly decorative. When grown for this purpose they have to be freely disbudded, for, failing this, they do not show their character sufficiently, and in many instances come with a fairly large "eye." As in the Japanese varieties, the habit of the Incurved type has changed, in this case probably owing to the Japanese blood that has been introduced into them by cross fertilisation, which has in some instances added colour to the flower as well as stockiness to the plant.

In no phase of Chrysanthemum culture has there been more improvement than in the outdoor or early flowering section. It does not seem long since we could count the number of good early varieties on the fingers, and Madame C. Desgranges and its sports, G. Wermig, and Mrs. Burrell, were the only varieties in general cultivation, whereas we have now a choice of two or three hundred varieties, including most shades of colour. Greater use might still be made of this type of Chrysanthemum for outdoor decoration, though I certainly am not in favour of extremely early varieties for cut-flower purposes, as by getting them too early it is likely to tire people of Chrysanthemums before the mid-season varieties come into flower. This is not to be desired, because it is during November, December, and January that Chrysanthemums are essential. Rather should attention be paid to raising varieties that will prolong the season by flowering as late as possible in the New Year.

CHAPTER I

CHRYSANTHEMUM HISTORY

BY C. HARMAN PAYNE

THE Chrysanthemum is a flower of ancient lineage. We are speaking of course of the Chrysanthemum of the autumn shows; the flower that adorns our greenhouses and gardens in the fall of the year. There are many other species such as *C. carinatum*, *C. coronarium*, and *C. leucanthemum*, but their beauty and significance pale before the regal splendour of the many varieties that have been raised by enthusiastic growers of *C. sinense* and *C. indicum*, the two species which have given us the Show Chrysanthemums of the present day.

Their history goes back into the mists of remote antiquity, and must be sought for in the horticultural literature of those two great Oriental countries, China and Japan.

Confucius, the eminent Chinese philosopher, who lived 500 years or more before Christ, makes a distinct reference to the Chrysanthemum in his work the Li-Ki. Chinese cultivators of Chrysanthemums have their names preserved right down through the ages, and of these T'ao-yüan-Ming is one of the most renowned. This grower lived A.D. 365-427. He was a scholar and dilettante, celebrated for his distaste for official cares. We are told that versification, the pleasures of the wine cup, and the harmony of his lute occupied most of his days. He was a great cultivator of Chrysanthemums, and it is on record that so successful was he that the name of the city in which he lived was

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afterwards called "Chü-hsien," meaning "Chrysanthemum City."

In later days one of his fellow-countrymen, also a poet, apostrophising a bed of Chrysanthemums in full bloom, remembering the fame of T'ao, says:

"Yet say not that they bloom to no purpose:
For did they not by their charms inspire
T'ao to poetry and conviviality."

Other famous Chinese growers are still known by name, but we must pass on to Japan.

In that country the flower is of more recent introduction. The Japanese have adopted the Chrysanthemum as the emblem of their most exalted order, one which is only conferred upon royalty and persons of the highest distinction. It was about the year A.D. 900 that Uda, Emperor of Japan, first instituted the famous Chrysanthemum Show in the gardens of the Imperial residence at Tokio. In Japan, as in China, this favourite flower is largely used as a decorative subject in every class of native art work, such as bronzes, pottery, porcelain, lacquer-ware, ivory, cloisonné-ware, and in textile fabrics. In A.D. 1186 the sword hilts of the reigning Emperor were decorated with figures of the flower, and a conventionalised form of it is used, and has been, for centuries past as the crest and official seal of the Mikado.

The first European author to mention the Chrysanthemum was Breynius, in 1689. A little later Rheede van Draakenstein, the author of the *Hortus Malabaricus*, described it. Engelbert Kaempfer visited Japan in 1690, and in his *Amoenitates Exoticae*, published in 1712, he describes our popular autumn flower under the name of *Matricaria*,

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as growing both wild and in the gardens of Japan. In 1750 Rumphius published the *Herbarium Amboinense*, and in this work the small-flowered variety is called *Matricaria sinensis*. Many other old botanical writers, such as Plukenet, Thunberg, Loureiro, Willdenow, Mönch, Vailant, and Persoon, figured and described under various names the flower now known as Chrysanthemum.

Authors are more or less divided on the question as to the date of the introduction of the Chrysanthemum into Europe, but it may be taken as certain that up to the year 1764 there is no record of its existence in English gardens. Breynius, in his *Prodromus Plantarum Rariorum*, states that it was growing in Holland at the time he wrote, but, if so, it soon disappeared, and was unknown to the Dutch at the time some writers speak of its reintroduction.

On the authority of the *Hortus Kewensis* the first known plant in England of the Chrysanthemum, which bore a small yellow flower, was growing in 1764 in the Apothecaries' Botanic Garden at Chelsea. A dried specimen of this plant is still in existence, and a description of it was given by Philip Miller, gardener to the Apothecaries Society, in his *Gardeners' Dictionary* (8th edition). But the specimen and description unfortunately do not agree, and the plant was so little esteemed that it was soon lost altogether.

For a quarter of a century afterwards we hear no more of the Chrysanthemum either in England or on the Continent. And on this ground we claim for Pierre Louis Blancard, of Marseilles, the credit of being instrumental in bringing about the uninterrupted cultivation of the large-flowering Chrysanthemum, our present-day show flower.

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Blancard was the captain of a French vessel that plied between Marseilles, his native city, and the East. Early in 1789, he returned from China bringing with him several plants of Chrysanthemums, but only one of these was he able to keep alive, and this was the variety for many years known here as the "Old Purple." It flowered satisfactorily in and around Marseilles, and shortly afterwards was cultivated throughout Provence. Ere long it reached Paris, and aroused discussion as to its proper name. Some of the French savants considered it to be the *C. indicum* of Linnaeus, but Ramatuelle, in the *Journal d'histoire naturelle*, opposed that view and called it *Anthemis grandiflora*. We need not nowadays discuss the question; the new-comer was generally known as *C. indicum*, and under that erroneous designation it made its appearance here in England, where, in 1795, it flowered for the first time in the nursery of Messrs. Colvill at Chelsea. A coloured figure (tab. 327) and a description were given by Curtis in the following year in the *Botanical Magazine*. The flower meanwhile receiving much appreciation from English growers, efforts were soon made to introduce new varieties, the facilities afforded by the vessels engaged in the China tea trade enabling fresh introductions to be made for many years in succession. It may be regarded as somewhat curious that, notwithstanding Blancard's original introduction, nowhere in French botanical or horticultural literature can we find any record of other importations being made into France. Probably the disturbed condition of the country at that time and for many years after may account for the lack of further introductions to France.

EARLY IMPORTATIONS AND SEEDLINGS

The "Old Purple" Chrysanthemum remained for a little time the only variety in cultivation in this country; but the gardeners of England were not slow to appreciate its value, and between 1798 and 1808 eight new varieties were introduced. The number was again increased by a sport from the "Old Purple" in 1802. Between 1816 and 1823 seventeen new varieties were brought from the East, and among those who were most conspicuous in introducing fresh varieties may be mentioned Mr. Thomas Evans of Stepney, Sir Abraham Hume, Mr. Thomas Palmer of Bromley, and Messrs. Barr & Brookes of Ball's Pond. But growers in this country were also largely indebted to Mr. John Reeves, a tea buyer for the East India Company who was resident in Canton and a correspondent of the Horticultural Society of London (now the Royal Horticultural Society).

The Horticultural Society of London entered enthusiastically into the work of collecting new varieties. Mr. John Potts, a gardener in the Society's service, made a collection of about forty varieties which were, unfortunately, lost on their way home. In 1823 the Society despatched Mr. John Damper Parks to China with instructions to collect among other plants as many good Chrysanthemums as possible. He sent home and brought with him on his return about twenty varieties, and all but four of them were distinct from those already in cultivation in this country.

The number of known varieties in 1824 was only twenty-seven, but these were increased two years later to forty-eight, several of the new varieties being vegetative sports. All these were in the possession of the Horti-

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cultural Society in the Chiswick Garden, and an attempt at classification was made by the Society's gardener, Mr. Donald Munro. Mr Haworth also classified the known varieties in 1833, and it is interesting to note that the style of nomenclature was then simple and descriptive, for the varieties were distinguished chiefly by their peculiarity of form and colour in names such as Tasselled White, Quilled Lilac, Golden Yellow, The Starry Purple, Curled Blush, and Quilled Orange.

By this time interest in the flower was pretty general, and this interest was further encouraged by the holding of a fine Exhibition in Chiswick Gardens in the autumn of 1825. Many of the novelties were illustrated and described in such publications as the *Botanical Magazine*, the *Botanical Register*, Sweet's *British Flower Garden*, and the Horticultural Society's *Transactions*.

Up to this time no attempt had been made to raise new varieties from seed. Indeed, although reference had been made on several occasions by persons interested in the new favourite to the possibility of raising seedlings, no one in this country appears to have attempted doing so until about 1830. But in France Captain Bernet, a retired army officer, and his gardener, Dominique Pertuzès, had raised seedlings as early as 1827. Other cultivators in France followed his example, the chief among them being M. Lebois, his widow Mme. Lebois, M. Miellez, and M. Pelé.

So far as England is concerned, Mr. Isaac Wheeler, of Oxford, was probably the first to raise seedlings. He exhibited some of his novelties at a meeting of the Horticultural Society on December 4, 1832, for which he was awarded a silver Banksian medal, and in the *Floricultural*

Cabinet shortly afterwards coloured illustrations of these early seedlings were given. Other English growers, Mr. Freestone and Mr. Short, also obtained novelties from seed, and in consequence the difficult and costly process of importing new Chrysanthemums from the Far East was no longer deemed necessary.

The scene of operations now shifts for a time to the Channel Isles. For some years prior to 1836 an amateur in Jersey, whose name has been variously given by different authorities, but which may reasonably be assumed to be Slater from evidence obtained in recent years, appears to have been most successful in raising new varieties. In that year Mr. Chandler, of the Vauxhall Nursery, who had acquired a stock of these Jersey seedlings, staged a collection of them at one of the Horticultural Society's meetings. This was only the first of a long series of successes, and for many years these Jersey Chrysanthemums occupied a leading position in the shows and in private collections.

The name of John Salter will ever remain closely identified with the development of the Chrysanthemum, and indeed he has been designated, not inappropriately, the "father" of the Chrysanthemum. Having already been engaged in its culture for some time, Mr. Salter went to France in 1838 and settled down at Versailles to improve the flower, as he found the climate of that country was far more suitable for the purpose than that of his native land. For ten years he laboured in France and obtained results that up to his day were not equalled. He imported from England all the old Chinese varieties, and the Jersey and the Norfolk seedlings. He added to this collection the best French varieties obtainable, and then

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set to work on a task that was destined to make his name famous in the annals of the flower which he did so much to improve.

Seedlings were first raised in the Versailles nursery in 1843, and from that time onward in Versailles and in Hammersmith, where Salter settled on his return to England, his work was attended with wonderful success and the fame of the Chrysanthemums increased every year. Salter retired in 1869.

Mr. Robert Fortune, the intrepid traveller and plant collector, made his first visit to China in 1843. He sent home two small varieties of Chrysanthemums which may be regarded as the parents of the present race of Pompons. Some seedlings of these were exhibited in 1846 at a meeting of the Horticultural Society, but as English growers were beginning to treat the large-flowered Chinese Chrysanthemum and its seminal varieties in the light of a florist's flower, these miniature Chrysanthemums were not much appreciated. On the other side of the Channel the view was different, and as the new-comers seeded freely the Pompon section soon made rapid strides, and for a time was held in considerable esteem. M. Miellez, M. Lebois, M. Pelé, and others contributed largely to the development of this race.

It was shortly after the introduction of the first of the Pompons that the early-flowering section made its appearance. Although this section was known as early as 1850, it made but little progress until thirty years later. In the olden days the varieties were all of the Pompon type, and it was not until varieties of early-flowering Japanese Chrysanthemums were produced by the French growers that the early section made any definite advance. The

PLATE II
HORACE MARTIN

A first-rate, early-flowering border variety.



THE
GARDEN
OF
THE
FUTURE



Anemone Pompon may also be regarded as one of the products of the early "fifties."

By this time the Chrysanthemum had definitely acquired the position of a florist's flower and was universally regarded as an important flower for the exhibitions. Societies for encouraging its culture were formed and special exhibitions rapidly sprang up all over the country. During the following fifteen or twenty years the Incurved type and the Pompons were the delight of the florists, and a high standard of perfection was insisted upon, especially in the case of the Incurveds.

Once again Chrysanthemum culture was taken up by growers in the Channel Islands, for, in addition to the work of John Salter, the Jersey raisers Charles Smith, Thomas Pethers, James Davis, Alexander Clark, and others, did much to maintain the high standard of the Incurved varieties.

At this time the articles on Chrysanthemum culture which appeared in the gardening press were supplemented by independent cultural treatises by such authorities as George Taylor, Joseph Dale, Samuel Broome, Shirley Hibberd, and others. So voluminous has the bibliography of this popular flower become that it is second only to that of the rose. It is enumerated in detail in the writer's work entitled *The Florists' Bibliography*.

SOCIETIES AND THE EXHIBITIONS

Reference has already been made to a show held in 1825 in the Horticultural Society's Gardens at Chiswick, when 700 plants in pots presented a fine display. Four years later a show was held at Norwich, by the Norfolk

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and Norwich Horticultural Society, and this, if not the first, was at least one of the first of the many shows that have since been held under the auspices of local horticultural societies. The Norwich Show was repeated for some years in succession, and its influence was felt in other localities.

Soon after the Norwich Show we hear of others at Swansea and at Birmingham, but it is doubtful whether the exhibits at these early shows consisted of anything more than pot plants. Cut blooms were probably not staged until a much later period. The Stoke Newington Chrysanthemum Society held its first show in 1847, and for many years was the centre of attraction for the Chrysanthemum-loving public. It gradually developed into a much more important organisation, being subsequently known as the Borough of Hackney Society until it gave rise to the present National Chrysanthemum Society. After the National Society was established the shows were removed from North London to the Royal Aquarium, Westminster. Ultimately, the Society was obliged to seek shelter at the Crystal Palace owing to the demolition of the Royal Aquarium.

Following the formation of the Stoke Newington Society, many suburban amateur Chrysanthemum societies were started in London, and in provincial towns the flower was equally successful in arousing public interest. At the Inner and Middle Temple gardens the benchers provided the public with a free exhibition of Chrysanthemums for many years, at first under the care of Mr. S. Broome and Mr. J. Dale, who were followed by Mr. Newton and Mr. John Wright. These "Temple" displays have long ceased, but there is no doubt that they did much to stimulate and in-

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crease the interest of the public in the popular autumn flower.

In these later days the London County Council provides free displays of Chrysanthemums in most of the public parks. Finsbury, Waterlow, Victoria, Brockwell, Southwark, and Battersea Parks afford the inhabitants of those districts excellent opportunities of admiring the Chrysanthemum as a town flower.

Ardent admirers have other means of gratifying their taste. There are committee meetings of the Royal Horticultural Society and of the National Chrysanthemum Society, where the novelties of the season are staged. There are also the numerous trade displays, which are open during the whole season, and where visitors are always welcome.

The enthusiasm for the Chrysanthemum has spread over all the temperate regions of the world. In Australia, Mr. Pockett has raised first-class varieties for the English exhibitions. In America, in France, in Belgium, and elsewhere, Chrysanthemums are cultivated for exhibition.

In the middle half of the nineteenth century, the chief varieties shown at the exhibitions were Pompons and Incurveds, although others such as the tasselled forms existed. In the Incurved section especially great progress had been made, Mr. John Salter and the Channel Island raisers having been successful in producing flowers of superior merit. These were cultivated in large numbers, but until 1854 there was really no authoritative decision as to the properties that should be considered requisite in a show Chrysanthemum. The Incurved form was finally adopted, and remained the standard of perfection for many years. Mr. George Glenny, a famous florist in his

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day, approved of the decision, and in his *Properties of Flowers and Plants*, will be found an enumeration of the points a show Chrysanthemum should possess.

But this hard and fast regulation was destined in the course of time to undergo some modification. To-day the old florists' standard can hardly be said to have much weight with the general public, and indeed is only accepted by a few of the growers who make a speciality of that section.

The Japanese Chrysanthemum is *par excellence* the exhibition flower of the day, indeed, it has enjoyed that distinction almost from its first introduction to Britain. We say almost, because when the type was first introduced, cultivators were so wedded to the idea of perfection as exemplified by the Incurved, that they regarded the more modern form as violating all the canons of propriety, and they treated the new-comer accordingly.

It is not possible here to trace the progress of the show Chrysanthemum during the latter half of the nineteenth century; in the sixties and seventies particularly, the Exhibitions were very numerous all over the kingdom, and the flower may be said to have attained the heyday of its popularity, when an event of some importance caused a considerable decline, namely, the death of Mr. John Salter.

Mr. John Salter's nursery at Hammersmith was a great centre of attraction. Here every autumn were shown the novelties of the season, for besides his own seedlings, Mr. Salter had remained in correspondence with many of the French growers, whose acquaintance he had made during his sojourn in France, and to his own were added the novelties he thus obtained from the other side of the Channel.

In 1859, when announcing that this collection was

open to the public, Mr. Salter stated he had upwards of 900 named varieties, while ten years later, when he retired from the business, his collection contained about 2000. In 1874 Salter died, and for a period the Chrysanthemum seemed to be under a cloud, and there was a great diminution in its popularity.

After his death, however, several growers still kept the public informed in successful Chrysanthemum culture, notably Mr. Adam Forsyth, who was followed by Messrs. Dixon, of Hackney, and others.

The greatest impulse ever given to the cultivation of Chrysanthemums was the introduction by Mr. Robert Fortune of the Japanese type of flower, although its influence was not manifest until some years afterwards. About the year 1860-1 this intrepid plant collector made his second visit to the Far East, and while there sent home seven varieties which he found were highly thought of by the Japanese florists. In describing his discovery he tells us, speaking of *Ah-sax-saw*, that it is the most famed in the vicinity of Yedo for its Chrysanthemums. At the time of his visit they were in full bloom and would have delighted the eyes of our English florists, if they could have seen them. He procured some of the varieties, quite distinct from those grown in Europe, and they were sent to Mr. Standish of Bagshot, who grew them, and in 1872 these novelties were staged at a meeting of the Royal Horticultural Society.

The names of these new-comers were *Bronze Dragon*, *Japonicum*, *Grandiflorum*, *Roseum punctatum*, *Yellow Dragon*, *Laciniatum*, and *Striatum*, but contrary to Mr. Fortune's expectations the English growers of that day treated the Japanese novelties with contempt.

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For a few years prior to his decease Mr. Salter took them in hand and raised some new varieties, but it was not until the French got hold of them that any great improvement was made. It must have been nearly twenty years after their introduction that the Japanese varieties impressed the public, and then right on to the present day the progress of the Japanese flower may be said to have revolutionised Chrysanthemum culture beyond all previous experience. Amongst the earliest of the French growers, M. Simon Délaux of Toulouse did much to develop this type. He also contributed very largely to the popularity of the present-day early-flowering varieties, for it was he who brought out in the first place the forerunners of the Japanese early-blooming varieties.

Among other pioneers in the work, mention should be made of Messrs. de Reydellet, Rozain-Boucharlat, Marrouch, Louis Lacroix, Pertuzès, and Dr. Audiguier. In the early eighties the seedlings of these raisers were grown largely in England.

LATER PROGRESS

When the Boro' of Hackney Chrysanthemum Society in 1884 decided to adopt the more comprehensive title of "National," it is probable that many of its members had but little idea of the extent to which the cultivation and exhibition of the Chrysanthemum the world over would be influenced. At that time the Society numbered 143 members and its annual income amounted to about £232: figures which sink into insignificance when compared with the Society's position in later years. With the scheme of affiliation for local societies a much wider area of interest was opened up, and, owing to this and the ever increasing

brilliancy of the Society's shows, Chrysanthemum culture for exhibition became almost universal.

The constitution of the National Chrysanthemum Society became the model upon which the Chrysanthemum Society of America, the French Chrysanthemum Society, and others were founded.

Dating from about this time there were introduced numerous novelties, chiefly from France, that were alike the wonder and despair of the importers. Every season, to a greater or less degree, the raisers had some surprise in store for our growers, and by this means the popular desire for novelties was encouraged, and the interest maintained. In form, size, and colour, the variability of the Japanese Chrysanthemum seemed to have no limits, and the shows were awaited every season with impatience. In the provinces, Edinburgh, Hull, Liverpool, Birmingham, and Sheffield held important exhibitions.

The celebration of the centenary of the introduction of the Chrysanthemum into Europe took place in 1889, when, at Ghent, Edinburgh, Antwerp, Lille, Nantes, Marseilles, Birmingham, and Chiswick, there were specially organised shows to commemorate the event. Later the Jubilee of the National Chrysanthemum Society increased still more the popularity of this famous flower.

It was in 1889 that the famous Mrs. Alpheus Hardy, the first of the hairy section, made its appearance. This and other varieties of the same type caused some little additional interest in the flower, but the greatest event in the history of the Chrysanthemum was yet to come. This was the appearance upon the scene of Ernest Calvat, the eminent French raiser, who did so much to maintain the

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honour of his native land, and to increase the number of high-class Japanese exhibition blooms.

Calvat's first seedlings were shown in this country in 1892 at a meeting of the National Chrysanthemum Society, and they caused intense interest. The experiment was repeated on several other occasions, and then little by little Calvat's blooms displaced on the show boards, at our exhibitions at least, the seedlings of almost every other raiser at home or abroad. His flowers became so famous that for a period of ten or twelve years no winning stand at any of our leading shows could be found without a large proportion of the Frenchman's productions. Among his seedlings some of the popular favourites were Mme. Carnot, Calvat's Australian Gold, Mrs. C. Harman Payne, M. Chenon de Leché, N.C.S. Jubilee, Mlle. Thérèse Rey, Ma Perfection, Mme. Ed. Roger, Mr. F. S. Vallis, Mme. Paolo Radaelli, Marquis Visconti-Venosta, Sapho, President Bevan, and President Viger. Many of Calvat's Chrysanthemums will long remain in cultivation, if not here, at any rate on the Continent, to testify to the great capacity and industry of one who in many respects must be regarded as the greatest Chrysanthemum raiser that ever lived.

Of modern French raisers, that is to say, contemporaries of Calvat, nothing much can be said from an English grower's point of view, for Calvat excelled them all, but it may be observed in passing that here and there in our modern exhibitions seedlings may be seen that have come from other continental sources.

Amongst the chief contributors in later years on the other side of the Channel have been the Marquis de Pins, A. Chantrier, A. Nonin, J. Héraud, Vilmorin Andrieux and Co., A. Cordonnier, and Liger-Ligneau.

Chrysanthemum raising has always been a struggle for supremacy, and the rivalry has at times been very keen. Sometimes the French have been in the ascendant, sometimes the English. There was a period in the history of the flower when the American grower looked like contesting the claims of the Gaul and Anglo-Saxon, but the transatlantic rivalry was of short duration. It is curious, however, that the keenest opponent to the most successful French grower should have been found in Australia. Mr. T. W. Pockett, of Victoria, commenced to distribute his novelties about fifteen years ago, and many of his flowers have helped the grower of big blooms to win prizes at the best shows.

The work is still going on and it will continue. It is only in recent years that English growers have contributed first-class novelties, but owing to repeated efforts they have raised a large number that equal the best obtainable for exhibition purposes, whilst in other directions, as, for instance, the raising of early-flowering border varieties, the English growers cannot be said to be less successful than their more favourably placed Continental or Australian rivals.

Of these men, Messrs. C. E. Shea, Weeks, J. H. Silsbury, Agate, H. J. Jones, H. Cannell, Norman Davis, W. Wells, and W. J. Godfrey, have done good service towards maintaining a high standard of excellence at English exhibitions, which are always characterised by displays of cultural skill unequalled at Continental shows. Mr. Thomas Stevenson is one of the best exponents of this high-class culture, and in this volume he describes the means by which his successful results are obtained.

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CHAPTER II

RAISING CHRYSANTHEMUM SEEDLINGS

By CHARLES E. SHEA

It is inevitable that the Chrysanthemum enthusiast possessing ambition and a scientific bent of mind should include within his ambitions the desire to create new and original varieties of his own raising. A generation ago the raising of Chrysanthemum seedlings in this country was regarded as practically impossible, and so for a time efforts in that direction appeared to be absolutely lacking. However, experiment soon proved that the apparently impossible was possible, and that seed might be obtained in this country, the necessary trouble and attention to essential details being forthcoming.

Before proceeding to a description of the *modus operandi* of seedling raising, it may be well to consider a few general principles. Haphazard cross fertilisation of any sort of variety with any other may doubtless by chance produce a new variety of great excellence, but the vast majority of the resulting offspring will be, in a sense, characterless. As with Narcissi so with the Chrysanthemum, crosses made with a definite aim, and varieties employed which experience has shown to have given a high percentage of first-class flowers—as Narcissus “Princess Mary” has demonstrated for the Daffodil world—will produce a far higher percentage of new varieties which are likely to make their name. Therefore it is important that every cross should be made with a definite object in view: for instance

PLATE III

MRS. GILBERT DRABBLE

A very large exhibition variety of the Japanese type. It flowers
a fortnight later than the variety Mrs. A. T. Miller.

the intensification, or moderation, of the colour of an already excellent variety; greater size (if so desirable) without altering the essential character; dwarfer habit: and, if haply may be, a new colour; although the "blue Chrysanthemum" at present appears below the horizon of possibility. And moreover if we got it, should we like it?

And in this system of definite crossing there is still room for the totally unexpected, for there is existent as one of Nature's Laws, one of its most obscure "first causes," that "prompting to vary," inherent in all matter, and existent throughout all ages; "variation"—"continuous," or "discontinuous," usually called "mutation"—we know not what's its fundamental origin, but we know its facts, and that from the same cross of a Narcissus came the fine varieties "Mrs. Robert Sydenham," "Francesca," and "Mrs. George Barr," and from the same apple such dissimilar varieties as "Cox's Orange Pippin" and "Cox's Pomona." The possibilities of variation even in definite crosses seems inexhaustible, but the products will, as a rule, be found to vary round the central point, or type, created by the intended cross.

So much for the leading principle; next the *modus operandi*.

To start with a clear understanding of the essential organs of the bloom is desirable. The Chrysanthemum is of the Order of "Compositæ." The flower has its *calyx* and the constituent *sepals*: the *corolla*, with its constituent leaves called *petals*. Next, the *androecium*, the male productive organs of the flower, the individual threads being called the *stamens*. Each *stamen* has its narrow *filament* bearing at its apex the *anther*, with its two lobes, within which, when it attains maturity, is to be found the yellow

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dust-like substance called *pollen*, easily visible to the eye. This *pollen* is the male fertilising agent, and fertilisation is the result of the conveyance of this pollen, via the stigma, to the as yet unfertilised ovum.

Next we have to consider the female reproductive organs of the flower, called the *gynoecium*, each member of which is known as a *carpel*, the apex thereof being the *stigma*. The gynoecium as a whole is called the *pistil*.

The foregoing may seem a little complex, but out of this complexity arise the two main items for practical consideration—the male *stamen* with its anther lobes and resultant pollen; and the female *pistil*. Our object then is to convey, at the proper moment, and by appropriate methods, the pollen from the anther lobes to the recipient pistil in condition to accept it. And then, by far the most difficult part of the whole process, the subsequent ripening of the seed so initially vitalised.

To begin with, it is important that the plants to be used should be in a strong and healthy condition. Plants subjected to the forcing cultivation resorted to for exhibition purposes are too enfeebled to furnish that reserve of vital force necessary for the reproductive process; the blooms having been unduly forced for the production of what is called the “full flower,” a mass of sexless petals is the result. A plant lifted from the open ground in August and then potted, and brought under glass in late September, often produces the best results.

We have now to consider the time and method most suitable for the process of pollination.

Nature, ever aiming, by its processes, to avoid the retrogression of race consequent on too close interbreeding, takes especial care in the case of the *Chrysanthemum*

to erect a barrier against self-fertilisation by arranging that, as a general rule, the large majority of the stamens of a bloom have shed their pollen before many of the carpels of that particular bloom mature. Truly a kind provision of Nature aimed at rendering it unnecessary for the pollinator to attempt that, in the case of the Chrysanthemum, practically impossible task of "deanthering" the flower, a matter so necessary in Narcissus crossing.

It will be found that the outer rows of stamens ripen first, and produce and shed their pollen, and so on in practically concentric rings to the middle of the dome of the bloom, before the outer row of carpels are in a fit state to receive the pollen. And so pollen has to be carried to them, by insect or brush, from at least some little distance.

The easiest bloom to work upon is the bloom which shows what is called an "open eye," for in this the organs of reproduction are more clearly visible, and accessible to the operations of the hybridist; but there will also be found, in most blooms, enclosed at the base of the petals, the usual stamens and carpels, and to get at these it is necessary to cut off, with a small pair of sharp scissors, the outer portions of the petals.

As to the time at which the operation of fertilisation should be performed, it may be taken as a rough, but sufficient guide, that whereas the pollen condition is generally easily apparent on inspection, the stamens of the seed-bearing flower, at least those in the outer rows, are mostly only ready for pollination at the time that the stamens of the central portion are ready to shed, or have actually shed, their pollen. One has to resort to some such rule, inasmuch as the inspection of the individual tiny

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stigmas of the bloom of the *Chrysanthemum* with the aid of a powerful glass would be beyond the range of practical (hybridising) politics.

The pollen, then, has to be conveyed on the point of a small, fairly stiff, and scrupulously clean, camel-hair brush, which should be thrust directly down on to the stigmas; not only once, but on two or more successive days, so as to ensure that the stigma may have been at one day at least in a properly receptive condition. About midday on a dry and sunny day is the best time for the operation, but sometimes such days are not forthcoming in late November and December when just needed, so a substitute has often to be provided by the creation, in the house, of a dry and moving atmosphere, provided by a correct adjustment of ventilation to the artificial heat from the hot-water pipes. Next comes the most difficult point of the process—the ripening of the seed.

Two points have to be especially noted. In the first place the bloom heads must be kept absolutely free from green-fly, mildew, and damping. Persistent fumigation, or applications of tobacco and sulphur powders, must be resorted to, and it is well at an early stage to cut off, well down to the stamens, the longer portions of the petals, which harbour aphids and mildew.

Next in order to secure a dry and moving atmosphere for the ripening of the seed, it is well to tilt the pot containing the plant, so that the fertilised bloom heads may be brought directly over the hot-water pipes. In about a month, or a little more, the bloom heads may be cut off with a few inches of the stem, and be placed in a metal pan over the hot-water pipes, removed from direct contact therewith by a piece of broken flower-pot. The pipes

should be of ordinary greenhouse heat. The bloom heads should be turned over daily for about another week, and then a slight fingering of the carpels, which should show evident distension, will soon result in the easy detachment of the seeds without appreciable pressure. The seed needs only to be scattered over a metal tray, still over the hot-water pipes, for another week, and it should be ripe.

I have pollinated flowers at the end of December, and the resulting seeds sown on the 5th of the following March have germinated freely.

The seeds once up, any gardener can do the rest, and the hybridiser has to possess his soul in patience for but a couple of seasons at most, so that the coming new variety may show its true form ; or possibly only for the current year, for sometimes the new variety will show its best on the seedling plant, but the first year's blooming must never be taken as the final verdict, so greatly do certain varieties improve after their first season.

How the creator of the new variety of *Narcissus* must envy the raiser of the new variety of *Chrysanthemum* in this matter of waiting for results.

CHAPTER III

BORDER CHRYSANTHEMUMS

By THOMAS STEVENSON

BORDER *Chrysanthemums* are a delight to everybody. Their cultivation can be undertaken by any one possessing a garden, for a greenhouse is not essential, though a

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garden frame is a useful acquisition. Popular as these Chrysanthemums have become, I believe that their cultivation is not so general as it ought to be. For market purposes, however, such vast numbers are cultivated, that in a normal season the flowers cause a glut in the market. But even in the presence of a glut of ordinary flowers there is always a steady demand for the more highly developed flowers, such as are sent in by Messrs. Lowe & Shawyer, Cragg, Harrison & Cragg, and many other good growers. It is greatly to the credit of these firms that they are able to produce a class of flower which creates a demand for itself and is unaffected by the glut of what may be termed second or third-class flowers.

It was my privilege during October 1911 to visit two or three of these huge flower-producing establishments, and I was very much struck with the great care and attention that was paid to outdoor Chrysanthemums, acres of them being covered with canvas each night to protect them from the wind and frosts. In some instances even, small portable boilers and pipes were used to help to finish the flowers late in October, the earlier varieties not requiring protection. In a great many instances the plants were disbudded, each carrying from 9 to 12 blooms, and in some cases even more. Where they were left as sprays the flowers were as close together as the ears in a field of wheat, notwithstanding the plants were from 18 inches to 2 feet apart each way. This is an instance of high-class cultivation, and it serves to show how far the culture of outdoor Chrysanthemums has been developed for market purposes.

But it is in the home garden that we desire to introduce the border Chrysanthemums. They come in flower

BORDER CHRYSANTHEMUMS 33

at a time when many of the bright summer flowers are on the wane, and, in company with the Michaelmas Daisies, make the borders and beds bright until frosts terminate the outdoor flower display for the season. In this portion of the Thames Valley we have been able to cut good flowers in November—and this is as late as we can reasonably expect to have them.

Excessively hot and dry seasons are not favourable for outdoor Chrysanthemums, for notwithstanding plenty of water is afforded the roots, the shoots become too hard to develop good flowers. This is probably the reason that better results are often obtained in the North of England and Scotland, where the plants bloom in cooler climatic conditions than they do in the South. I do not for one moment wish to infer that they are troublesome subjects to grow in my own, or any, district, or that good results are only obtained occasionally, for, given a normal season and proper attention, the plants will flower well in any garden if a fairly open position is afforded them.

For massing in the mixed border, no plants excel Chrysanthemums during September and October, the rich yellows, bronzes, reds, and whites contrasting so well with the Asters or Michaelmas Daisies. An illustration of their value may generally be seen in the long, mixed border at Hampton Court Palace, where the moderately light and fairly moist soil perfectly suits the requirements of the plants. Any one desiring an object lesson in the use of Chrysanthemums for the mixed border might with advantage pay a visit to the famous garden at Hampton Court during the month of September.

It may be objected in respect to outdoor Chrysanthemums that they furnish only a mass of green foliage

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during the early part of the summer, but if this fact is considered a drawback, the plants can be cultivated in nursery beds until they are required for the borders, as with care they may be transplanted readily at any time, provided they are planted in soil that will cling to the roots and care is taken to cut round the roots a few days before lifting them. Following the transplantation give the plants plenty of moisture at the root and spray them overhead for the first few days. In this way they may be planted when such annuals as Stocks, *Phlox Drummondii*, Larkspurs, and *Nigella* have flowered, and so provide a continuous display.

For making an autumn display in large beds chrysanthemums are also useful, and they need not be planted in such a position until some earlier flower has ceased to be attractive or, if planted from pots in May or June, the dark green foliage will serve as a very suitable groundwork to such tall-growing subjects as Gladioli, *Liliums*, and *Hyacinthus (Galtonia) candicans*.

When planting large beds with more than one variety care should be taken in the selection, as the heights may vary in different localities and soils. It is better to choose only one variety for each bed, unless the exact height each variety is likely to attain in the particular neighbourhood is already known.

In France great quantities of dwarf-growing Chrysanthemums are grown in nursery beds or in pots for providing autumn displays. The plants are not placed in the beds until quite late in the season, or just before they come into bloom; early frosts being less frequent than in England, I have seen plants making a grand display as late as the second week in November.

PROPAGATING BORDER VARIETIES 35

As already mentioned, in the north of England and in Scotland border Chrysanthemums succeed well and gardeners generally give them rather more attention, possibly from the reason that country houses in Scotland are occupied more during the early autumn than at any other time, and there is a good demand for showy cut flowers during the shooting season, when large house parties are the rule.

In recent years there have been many exhibits from Scotland at the early autumn shows of the National Chrysanthemum Society, and they have attracted considerable attention on account of their excellent colour and fine quality; but it must be borne in mind that many of the northern growers shade or cover their plants with thin tiffany during the time the flowers are opening. This covering is no doubt intended to protect the flowers from the heavy night dews, these being more detrimental to the under florets than showers of rain. If blooms of exceptional quality are desired, it may be advisable to adopt this method of protecting them, even in the Midlands and South; such protection is especially desirable for disbudded plants, these being longer in opening than the spray blooms.

CULTIVATION OF BORDER VARIETIES

In most localities the stock plants should be lifted from the open ground as soon as severe frosts are anticipated; the lifting should not be delayed after November unless some means are taken to protect them. They may be packed fairly close together in cold frames or on the border of a cold peach house, shaking a little fine loam or leaf soil over the roots.

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It is not absolutely necessary to lift all the varieties, as many of them are sufficiently hardy to live through the winter in the open ground, but as young plants always give the best results and the cuttings taken from the lifted plants root more readily than those taken from the open ground, the trouble of lifting a few roots of each variety is amply repaid.

The middle or the end of February is sufficiently early to insert the cuttings, and by this time good clean shoots should be present in quantity. Boxes are to be preferred for rooting them in, the treatment being the same as advised for striking the indoor decorative varieties.

As soon as rooted and before the young plants get drawn they should be potted off singly into 3-inch pots, transferring them to a cold frame. As soon as the roots become active all the air possible must be admitted, and the more hardy the treatment the more likely will the plants succeed when transferred to the open ground.

The date of planting will vary according to the locality, but if the plants were thoroughly well hardened before planting, they will not suffer any harm from a degree or two of frost; whilst if they are left in the boxes until they become the least bit drawn they are bound to suffer. My outdoor Chrysanthemums have been planted regularly in an open piece of ground about the middle of April and they have always succeeded well, but in northern localities it might be advisable to defer planting until the first week in May.

The ground that the Chrysanthemums are to occupy should be well and deeply dug some time beforehand, and if it is fairly rich in manure supplied for an earlier crop, no fresh animal manure should be necessary, but should

the soil be very light and porous or, on the contrary, very heavy, a good dressing of leaf mould or manure from a spent mushroom bed or hotbed will tend to make the heavy soil more workable, and light soil more capable of retaining moisture. Should the soil be deficient in lime, a light sprinkling of lime should be applied as digging proceeds.

Planting should be done when the soil is in a fairly dry condition, and heavy soil may have to be lightly forked over to break down the lumps, a fine tilth being necessary for planting, and less likely to harbour slugs. If the plants are a fair size and have been well hardened there is not much likelihood of damage from slugs, but a sprinkling of soot immediately after planting may be given as a preventive measure.

Where border Chrysanthemums are cultivated in large numbers for cut blooms they should be planted in beds, each bed having three rows of plants from 18 inches to 2 feet apart and about the same distance between the plants in the rows. This should allow them plenty of room, and if a small path about 18 inches wide is allowed between the beds, this will provide plenty of room for attending to the necessary hoeing, tying, staking, and watering.

Beds such as these can be easily covered in the autumn with tiffany stretched on light uprights well above the plants.

Borders under a fruit wall are often utilised for early-flowering Chrysanthemums, and if due consideration is paid in selecting the heights of the varieties, such borders are very effective.

Plants for transferring to the flower borders or beds should be cultivated according to the manner already

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described, and by cutting around the roots, say, fourteen days before the transplantation, they may be lifted without injury at almost any time during the summer, provided the watering and spraying overhead is not neglected.

When planting in flower beds or borders, care is necessary to consider not only the colours but the heights of the plants, so that they will harmonise with the general scheme and not overshadow other plants or be overshadowed by them. Wherever they may be planted care must be taken to firm the soil well about them, a loose soil tending to develop a sappy growth, which is as little necessary in plants in the open ground as in pots.

If the plants are put out in April or early in May and the weather is hot and dry it may be necessary to give them one watering, but in ordinary conditions this should be all they require for some time.

Staking the Plants.—The provision of stakes should be made immediately after planting, selecting stakes of sufficient height to suffice for the season. If these are put in whilst the line is in position for planting, the work can be carried out in a neat and methodical manner and the stakes will not offend the eye as they might if inserted in a haphazard manner. One tie may be given at once and this will probably suffice for a month or six weeks, or till the plants are beginning to produce side growths.

With the exception of the recurrent tying the summer work is not arduous. The hoe should be used frequently among the plants to keep down weeds and also to prevent too great a loss of moisture by evaporation during hot weather.

Caterpillars must be searched for. A sharp tap to each plant will usually bring them down to the ground, where

they may be killed. Green-fly may be destroyed by spraying the plants with some approved insecticide, a few gallons applied by means of a knapsack sprayer being sufficient to treat a large number of plants.

Outdoor Chrysanthemums are usually allowed to grow and bloom naturally, and they are best treated in this manner when grown merely for the decoration of the garden, but for cutting purposes flowers of a rather better quality are sometimes desirable. In such cases disbudding must be practised, and if suitable varieties are selected surprisingly good results may be obtained. As a rule the plants should be allowed to break naturally, afterwards disbudding them to one bloom to a shoot, or it may be necessary to thin the shoots somewhat if extra good blooms are desired, but care must be exercised in this matter as "hard" buds occur even out of doors and they open only with great difficulty. In all cases where disbudding is practised a little protection of the kind already described should be given. At about the time the flower buds begin to show the plants may be given a little manure water, this, of course, if the weather is dry, but if showery, a light sprinkling of artificial manure once or twice, at intervals of a fortnight, will have an equally good effect, and greatly enhance the colour of the flowers.

Plants in light soil need much more water and manure than those in soil of a heavier nature, and great care must be exercised in the latter case, both as regards water and manure, or the plants will produce coarse wood and very little flower.

There are so many varieties of almost equal merit that it is no easy matter to compile a list. However, the following varieties have been selected with great care.

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Those distinguished with the letter "D" are suitable for disbudding when grown for cut blooms. The short list of Pompons contains a few varieties that are specially suitable for the flower border or for beds, and they can be relied upon to give a good mass of colour wherever planted.

The early-flowering Singles are gaining increased appreciation, and many good seedlings were raised in 1911.

BORDER VARIETIES (JAPANESE)

D. Bronze Goacher	2 ft.	September	Bronze.
Carrie	2 "	"	Rich yellow.
D. Countess	2 "	"	White.
Ethel Blades	2 "	"	Crimson.
D. Goacher's Crimson	2 "	"	Crimson.
D. James Bateman	2 "	"	Pink.
Leslie	1½ "	August	Golden yellow.
Normandie	2½ "	September	Pink.
Orion	2½ "	"	Golden yellow.
Polly	2 "	"	Bright orange yellow.
Roi des Blancs	2½ "	"	White.
Savoie	2½ "	"	White.
Miss Balfour Melville	3 "	"	Deep bronze.
Holme's White	2 "	August	White.
La Somme	2 "	September	Mauve pink.
Elstob Yellow (Imp. H. Martin)	2 "	"	Bright yellow.
Crimson Massé	2 "	"	Crimson.
Provence	2½ "	"	Pink.
D. Cranford Pink	2½ "	"	Pink.
D. Mdme. Auguste Nonin	3 "	"	Blush pink.
D. Golden Glow	3 "	October	Golden yellow.
J. Bannister	3½ "	"	Pale yellow, shaded red.
Perle Châtillonnaise	3½ "	"	Cream flushed pink.
D. Betty Spark	2½ "	"	Rosy pink.
D. Dolores	2½ "	"	Deep terra-cotta.
D. Almirante	2½ "	"	Crimson.
D. Le Pactole	2½ "	"	Bronze.

PLATE IV

H. C. TILL

A Japanese variety introduced by Mr. H. J. Jones

THE
GARDEN
OF
THE
FUTURE



BORDER VARIETIES (POMPONS)

Flora . . .	1½ ft.	August	Yellow.
Anastasia . . .	1 "	September	Purple.
Little Bob . . .	1 "	"	Crimson.
Mrs. Selby . . .	1½ "	"	Blush.
Mrs. E. Stacey . . .	1½ "	"	Apricot.
Mdme. E. Lefort . . .	2 "	"	Bronze.
Piercy's Seedling . . .	1½ "	"	Deep yellow.

BORDER VARIETIES (SINGLES)

Firebrand . . .	3 ft.	Crimson scarlet.
Eva Grantham . . .	2 "	White.
Good Hope . . .	2½ "	Pink.
Hypathia . . .	2 "	Pink.
Kate Carter . . .	2 "	Salmon.
Kate Westlake . . .	2 "	Crimson
Kitty Riches . . .	3 "	Pink.
Nellie King . . .	2 "	Yellow.
Nellie Riding . . .	3 "	Bronze.
Richard . . .	1½ "	Claret.
Well's Pride . . .	2½ "	Orange red.
White City . . .	2 "	White.

CHAPTER IV

JAPANESE CHRYSANTHEMUMS

I HAVE no knowledge of any plant that responds better to good cultivation than the Japanese Chrysanthemum. As I have said already, present-day growers have advantages that cultivators did not possess a quarter of a century ago, for they have many more varieties of better habit that produce larger flowers.

Whether the Chrysanthemum as an exhibition flower is declining in popular favour or not is doubtful ; many exhibitions are not now supported by exhibitors as they were formerly, but local shows are more numerous, and these are supported probably at the expense of the larger ones. The prizes have decreased in value, and the expenses of getting the flowers to the shows have increased insomuch that the expenses absorb a great proportion of the prize money. In these circumstances, if a grower has not a good chance of getting a good place in the prize list he stays at home and supports the local show to the detriment of the larger shows. It may be said with good reason that the vase classes at the bigger shows have tended somewhat to decrease competition, but notwithstanding this fact there is greater general interest in Chrysanthemums now than at any previous time.

In the cultivation of any plant for exhibition it is imperative to do everything possible to attain the object

in view, namely, first-class flowers. In the case of Chrysanthemums cuttings must be obtained from plants that have been selected for the good quality of their blooms, and such plants should be free from disease of any kind.

When cutting down the stock plants it is advisable not to cut them too low or bleeding will result. After the cutting down, place the plants in a position where they will be exposed to the light and air, and spray them over with an insecticide, or if they have been troubled with rust they should be sprayed with a solution of sulphide of potassium at the strength of $\frac{1}{2}$ oz. to the gallon of water—this also is a good preventive of mildew.

By giving the cuttings this treatment, it ensures them having a clean start, and when placed in a light, well-ventilated position, they will develop strength and firmness instead of the more sappy growth which is made when the prevailing conditions are more warm and moist. It sometimes happens that certain varieties are slow in producing growths suitable for cuttings; such plants should be partially shaken out and placed in boxes with just a little fresh soil shaken among the roots. When these are placed in gentle warmth this often has the effect of making them throw cuttings freely.

The exact date at which cuttings should be put in is a debatable point, and my own experience shows that the date has not the influence on the bloom that some growers imagine. It is true that in a few instances it seems best to secure cuttings not later than the end of November, and this applies to those varieties that are naturally late bloomers, the Jameson family being a very good illustration, but even in such cases carefully selected cuttings, inserted in February and topped before potting into

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5-inch pots in April, will produce equally good flowers. There is no advantage to be gained by early propagation, except that the earlier-rooted plants may give two or three blooms, whilst the later ones rooted two or three in a pot yield only one flower from each. But as the "Jameson" varieties usually break rather unevenly, there is the danger when two or three shoots are allowed on the same plant that one will be strong and the others weak, so the advantage is again with the late struck plants. Growers in Northern or cold districts will naturally commence propagation earlier than those in the Midlands and South, but December is quite early enough to start general propagation, and it may be continued until the first week in February. At this latter date, with just a little heat, cuttings strike very freely, and those varieties that flower too early on crown buds may be inserted at this time in confidence that the blooms will be better than from plants rooted very early. Master James, Lady Talbot, Mrs. A. T. Miller, White Queen, James Lock, Mrs. L. Thorne, Frances Jolliffe, Evangeline, and D. B. Crane are varieties that I have found succeed well if rooted late. Chrysanthemum cuttings usually form roots very readily, and any house that is kept fairly close and in which the temperature does not exceed 50° will suit their requirements, but if the house is draughty it will be preferable to put the cuttings in a case or frame within the house. This method ensures them rooting without flagging, and is probably the best way to strike them.

Even a cold frame may be made to serve for rooting the cuttings, but in the event of severe frosts there will necessarily be considerable delay; therefore, when a frame has to be used it is best to make up a very slight hotbed

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and place the frame on it, plunging the pots almost to the rim in ashes or cocoanut fibre.

In selecting the cuttings choose those that are of moderate strength and that appear to start some distance from the base of the old stem. If they cannot be obtained without flower buds, cut them over and place the stock plants in a little heat, when a fresh crop of suckers should soon come up, and these, though later, will often answer the purpose better than earlier ones bearing flower buds.

The individual grower must decide whether the cuttings shall be rooted singly in small pots (thumbs), or two or three placed round the sides of a 3-inch pot, or planted like *Pelargonium* cuttings in boxes. Each method will produce good results if the cultivator exercises proper care; those in boxes may root quickest owing to the greater bulk of soil keeping them in a more equable state of moisture, but this gain will be counteracted by the greater check the rooted cuttings will experience during the potting-off process, those in single pots scarcely feeling the shift at all.

The pots and crocks should be perfectly clean at the time they are used, and the potting compost may consist of loam, leaf mould, and sand in equal proportions, first passing these materials through a half-inch sieve. It is detrimental to make the soil too firm in either pots or boxes, though in inserting the cuttings care should be taken to firm them in the soil, placing them so that they quite rest on the bottom of the hole that is made to receive them. A thorough watering should be given before placing the pots in the frame, it being undesirable to saturate with moisture the cocoanut fibre, or other plunging material,

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as too much moisture, even from evaporation, is injurious. No further water should be needed till the young plants are rooted, except that they may receive a very slight spraying overhead on bright mornings.

The frame or house must be kept close till the plants are rooted, but it may be advisable to admit just a very little air to the frame each evening, closing the ventilator again in the morning; this will allow any superfluous moisture to escape and check any tendency to damp.

When the cuttings have commenced to make roots air must be admitted, increasing the amount gradually till it is found that they will bear removal from the frame to a cool greenhouse or pit, where a slight amount of heat can be employed in the event of severe frost, allowing the plants plenty of space between them to ensure their remaining stocky. In a week or two after removal from the cutting frame they should be in a fit condition for their first shift. If rooted singly in thumbs 54s (4-inch pots) will be a suitable size, if in boxes, or several in a pot, medium or large 60s (2½- or 3-inch pots) will suffice. The soil at this potting must still be fairly light, as, for instance, 4 parts loam, 2 parts leaf mould or well rotted manure, and 1 part sand, adding two shovels of wood ashes, and a 60-size pot of bone flour to each bushel of the compost.

The soil must be made firm, but care should be taken not to injure the roots during the process of potting. On returning the plants to the house or frame, give sufficient space to ensure a free circulation of air among them; the days being still short, the least tendency to crowding would cause the plants to grow weakly and lose the older leaves early in the season.

If the soil is in a moist condition at the time of potting the roots will not require watering for a few days, but on bright days a moderate spraying with clear water overhead will do good. When it appears necessary the plants should receive a good soaking, keeping the atmosphere fairly close in the meantime, though at the end of a fortnight they should have got well hold of the new soil, when air may be freely given on all fine days so long as cold draughts are prevented.

Watering must be given careful attention, keeping the plants rather on the dry side during cold weather, but on no account allowing them to suffer from drought, as this would cause hardening of the stem and hindrance to the flow of sap.

A slight spraying overhead may be given on fine mornings, but not in the afternoon, as cold nights are the rule in February and March. Plants in cold frames or frames that are only slightly heated will require the protection of garden mats placed over the glass each evening, to prevent a check arising from cold.

If the plants succeed well they should be ready for a further shift early in April, this time into (6-inch) 32 size pots.

The soil at this potting must be a trifle rougher than was used at the previous operation, such as good, turfy loam pulled up fine 4 parts, leaf mould and rotten manure 1 part, sand 1 part, a little soot, wood ashes and bone meal as advised before, and if available some old mortar rubble pounded up fine. At this potting all inferior plants should be discarded and only those potted that are required for blooming. The soil must be made very firm in the pots, using a small rammer to ensure its being made even all

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down the sides of the pot. On returning the plants to the frame arrange them thinly, for, as the plants should only be left in the frame three to four weeks according to the state of the weather, it is desirable to avoid a further handling. In the event of the weather being warm and dry, two days after potting may be quite long enough to leave them without a root-watering, which should be thorough when carried out.

If the weather is not too hot the frames may be kept moderately close for a few days after potting, but rather than raise the temperature in the frames excessively high, it is better to admit air and apply a light spraying with clear water every two or three hours, which will be sufficient to prevent the leaves from flagging.

As soon as the roots get well hold of the new soil, the frame lights may be removed entirely on all favourable occasions, as the more hardy the plants are now kept the less check will they experience on their removal to the open air. Provided a fairly sheltered position is available, there is very little advantage to be gained by leaving them in the frames after the first week in May. But, on the contrary, the plants fill out more quickly and improve in all respects out of doors. On removing them to the open a position should be selected that is sheltered from cold winds and a good ash bottom prepared for the pots to rest upon so that earthworms will not get into the soil. Each plant should be provided with a stake, leaving the stakes long enough to serve for three weeks or a month, or until the plants are repotted.

At this stage the plants will require water pretty freely, and when they have been out of doors for a few days it will be necessary to examine them twice each day. As

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the pots begin to fill with roots, liquid manure may be given to the stronger-growing varieties. This stage of growth being one of the most critical periods in the cultivation of exhibition Chrysanthemums, it will be well to emphasise the necessity of giving the plants every attention. They should be transferred to their final pots before the roots have become pot-bound, because if they fail to root into the new soil before the plant receives a check, all the good cultivation up to this point will have been in vain. A steady and fairly well ripened growth throughout the season is desirable, and checks arising through the plants remaining in pots of the smaller sizes too long, a severe freezing, or a period of drought, are all points to be avoided.

From the third week in May until the middle of June is about the time for the final potting, and providing the plants are in good order the earlier it is done the better. The soil at this potting should be prepared some time previous to use, storing the compost in a dry shed and turning it over two or three times in the meantime in order to mix the ingredients thoroughly and prevent any fermentation arising owing to the presence of bones or other manurial ingredients.

It is not necessary to have an elaborately prepared compost mixed with chemical accuracy, but it is essential that the chief constituent shall be good, rich turfy loam that has not been stacked too long. This loam should be pulled to pieces of about the size of a walnut, and leaf mould, decomposed droppings, lime rubble, ashes, and sand added, whilst the further addition of a 5-inch potful of soot and another of bone meal will make the compost more lasting. For the stronger-growing Japanese No. 12

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size pots (12-inch) are the best size, but for the weaker varieties 16s (10-inch) pots are sufficiently large.

These pots and the crocks used for draining them should be thoroughly clean. Crock the pots well, covering the crocking materials with good fibrous loam, from which all the dust has been shaken. If this is done well there will be no fear of the plants getting water-logged even in wet weather. Commence by potting the strongest varieties first, taking the others in the same order. The plants should be in a fairly moist condition at the time of potting, and the soil must be made very firm, burying the old ball about half an inch and leaving at least $1\frac{1}{2}$ inch space for watering and receiving surface-dressings later in the season.

Do not place them in their permanent positions immediately after potting, but arrange them pot to pot for a time; where they will shelter each other somewhat from the sun and be more easily treated to the frequent syringings they require. Two or three days after potting (according to the state of the weather) they should all be thoroughly soaked with water, making quite sure that each plant has the old as well as the new soil thoroughly soaked through. This is necessary, as once the old "balls" become really dry it might take several days before they would be soaked through again. After a soaking of this kind, they should not require more water for a week or ten days, when they may be transferred to their permanent quarters for the summer.

A suitable position may be found by the side of the garden path, or if an open space is available where they can be stood altogether in rows, anything from 4 to 6 feet apart, and about 2 feet apart in the rows, then so much

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the better. In this latter position they may be stood on a trellis or on a good ash bottom, and in either case worms ought not to be troublesome, though in the latter case they may be guarded against by sprinkling the surface well with soot before arranging the plants.

Posts should be fixed in the ground, to which one or two rows of wire may be strained, for tying the tops of the stakes to prevent injury by the wind. These should be got ready before the plants are placed in position, as the permanent staking should be done as early as possible after the plants have been removed out of doors, for, although the small stakes might suffice for the plants for some time longer it saves a future handling.

STAKING JAPANESE CHRYSANTHEMUMS

Where the plants are set out in rows on a garden path or paths, they should be graded according to the natural heights of the different varieties, and in other cases where they are arranged in rows on an ash bed it is even more necessary, or some plants will be unduly shaded by others. This arrangement will also facilitate the operation of staking. It is the usual practice to put one stake to each plant, slinging each of the 3 shoots which follow the natural break to this central stake. It is an economical method, but in a wet season when the shoots are often brittle, many are apt to get broken, so whenever possible a stake should be placed to each shoot after it has been decided how many shoots are to be retained, each stake being tied to the wire. This practice entails a little extra outlay in stakes, but it saves much raffia and time in tying, and prevents the loss of many valuable shoots. The tying

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of the shoots must be given regular attention, and during the height of the growing season once a week is not too often to do this work. Do not make the ties too tight as Chrysanthemum shoots swell very fast. Never twist the matting round the stake, but secure the shoot and the stake in the one loop round, and by allowing half an inch between stake and shoot it will give sufficient play and the matting will run up the stake as the point of the shoot grows.

WATERING AND FEEDING JAPANESE CHRYSANTHEMUMS

In the early stages be very careful with the water-pot and only water when the plant actually requires more moisture. This can be determined by gently tapping each pot with a piece of soft wood in the form of a very small mallet—about the size of an ordinary cotton reel—and if it is of soft wood the pots will not ring unless they are dry.

I always water Chrysanthemums through a coarse rose, that distributes the water evenly over the surface of the soil and keeps it even and firm without exposing any of the roots to the sun, which often occurs when they are carelessly watered direct with the spout of the can, much to the detriment of the plant.

As the plants continue to develop it will be necessary to examine them at least twice a day for water, about 10 A.M. and 3 P.M., in the morning to water those that would not pass through the day without suffering, and in the afternoon to give what may be termed a more general watering. There may be times when, through stress of work, the plants may be overlooked and get excessively dry. If flagging occurs after such neglect a slight spraying over-

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head should cause them to revive, with, of course, a good soaking at the root. In such a case one watering is not sufficient, and probably the pots will require filling up three or four times before it is certain that the soil is thoroughly soaked.

Two or three mishappenings of this nature during the growing season often causes the loss of valuable foliage, and such hardening of the tissues of the plant that hinders proper development. It is possible to get the plants into such a condition, by careful watering, that one or two hours of drought will not make them flag to a serious extent. Before the operator can water the plants properly he must study the varieties, as one variety may require twice as much water as another, and probably those which need the most water are those that have not an abundance of foliage or gross wood, but one thing I have noticed, that they are usually finer or smaller and more wiry in the root. Good examples of varieties that need much water are Mrs. G. Mileham, Harry Wood, Walter Jinks, and White Queen.

If the plants are potted early and succeed well, the pots will be quite full of roots by the early part of July, and it is not wise to wait till they have exhausted every bit of nourishment in the soil before helping them with stimulants. I do not agree with writers who state that manure is not necessary until the flower buds are selected, for unless the plants make good stems to the buds (not necessarily gross and sappy) the flowers will not finish well. Therefore I afford a little liquid manure as soon as it is found that there are plenty of roots in the pots. Weak doses of liquid manure made from soot, cow manure, horse or sheep manure, may be given with advantage, using the liquid on two

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consecutive days to make sure that each plant gets a little. Once or twice a week will be sufficient at first, increasing it in strength and frequency as the season advances. By the end of July it may also be necessary to apply a very light surface dressing of artificial manure, repeating the application about once every week or ten days until the flowers are fairly well advanced. There are many special Chrysanthemum manures on the market and most of them produce excellent results. By following the instructions of the vendors it is not easy to go wrong, and unless the cultivator has a special chemical knowledge it is better for him to use one of these carefully compounded manures than to dabble with crude manures, such as nitrate of soda or sulphate of ammonia, although excellent results have followed the use of one or two very light dressings or watering of nitrate of soda when the plants have appeared a little slack, say, during a hot spell in the early part of the season. The stimulus given the plants being noticeable until the flowering period when compared with those not so treated, the flower itself, in most instances, having extra solidity and breadth of floret. When experimenting with manures it is necessary to leave a few plants undressed in order that the actual result can be measured.

SYRINGING

For the early stages of growth, and later in the season when the plants are stood out of doors, the use of the syringe has been recommended because it contributes to the cleanliness and health of the plants. But I have known syringing carried to excess, for too much moisture tends to produce sappy foliage and wood which seldom matures well.

PLATE V

GOLDEN KING

An Incurved flower of exhibition size introduced by
Messrs. Wells & Co. in 1912

THE
GARDEN
OF
THE
FUTURE



During hot weather a good morning and afternoon syringing is beneficial, but these are sufficient, and it is best done after the morning and afternoon waterings. I prefer never to leave it later than 3.30 P.M., so that the plants may get quite dry before evening, though other cultivators who live at higher altitudes may find it practicable to syringe even later. On dull days one operation must not be exceeded. Well diluted soot water is, I think, better to use than clear water; it tends to prevent rust, and it certainly makes the foliage distasteful to insect pests.

TOP-DRESSING

By a top-dressing is not meant merely sprinkling a small amount of artificial manure on the surface, but, on the contrary, the addition of soil and manure. Heavy dressings of, say, half an inch of soil at once, are undesirable, these, in many instances, doing more harm than good; but when the pots get very full of roots and these appear on the surface, a good handful of soil, containing just a little fertiliser, is beneficial and it serves to protect the young roots from the sun and air. This top-dressing should not be pressed hard, but just spread over the surface and watered in, and here is the advantage of watering with a rose, for after two or three waterings it will have settled down nicely and the young roots will be finding their way into it. Such dressings as these may be given from four to six times during the months of August and September, the last one just previous to housing. This system of feeding enables the plants to preserve a moderately strong growth until the close of the season.

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"TAKING" THE BUD

The question of bud selection is one of the most important points in the successful cultivation of Japanese Chrysanthemums for exhibition, because it is one of the means the grower can adopt to make sure that his plants will yield first-class flowers at a certain date. In the Midlands and North first-crown buds (the first bud that shows after the plant has made its natural break in May or June as the case may be) of most varieties develop at about the right time for the exhibitions, and with the exception of a very few varieties flowers produced by the first-crown buds are the best, being heavier and more characteristic of the variety than those that may be secured later; these latter, in some instances, may be a little better in colour, but they lack size.

In the Southern districts many varieties flower too early for shows held after the first week in November, and so a system of striking the cuttings or of stopping the shoots must be employed to get blooms of the best possible size from a week to ten days later than would be the case if they were allowed to grow quite naturally. March and early April is a time much recommended for stopping many varieties, taking the second bud that appears after this stopping. In many instances this method may be satisfactory, especially with certain varieties, but it has never satisfied me. The plants at this time of the year being small and making only slow growth experience a very great check and, after repeated trials, I have proved that the strongest plants of a batch stopped at this season never recover the lost ground—they require

so long to get into growth again that they do not equal in strength the weaker ones that are not subjected to the stopping.

It is possible by striking the cuttings rather early, say, in November, or late (early in February), to alter the time of blooming somewhat, but the actual difference is not great, from a week to ten days being the widest difference that can be made by altering the date of inserting the cutting without losing a proportionate amount in the size of the flower. But where varieties are known to be too early on first-crown buds, the best plan is to get good plants that made their natural break in May, and stop them at some suitable date in June, after they are nicely rooted in their flowering pots, securing the next bud that appears after the stopping. Plants so stopped do not suffer any serious check, but the flowering period may be retarded two or three weeks in this way, and the resulting blooms are nearer to full first-crown size than those obtainable by any other method, and further, the flowers open well and are usually of good colour. This mode of treatment suits F. S. Vallis, Lady Talbot, Master James, James Lock, and Mrs. G. Mileham, and practically all the varieties that are just a little too early on first-crown buds.

There are some varieties like Mrs. W. Knox and White Queen that are quite good on what are termed natural second-crown buds, but there are not many of them, and before deciding to let any variety flower on this bud the cultivator must be quite sure that it will finish a good big flower, for there is much more satisfaction in growing a large flower, even if it is a little early, than a small one that is but little good when you have got it.

Another class of flower is those that are naturally very

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late bloomers, of which type the old variety Mrs. H. Weeks furnishes a good illustration, and of present-day varieties there are Edith Jameson and its sports, Madame R. Cad-



FIG. 1.—Selecting the Terminal Bud. A, B, C, D indicate buds that need to be removed

(From the *Gardeners' Chronicle*)

bury, Hon. Mrs. Lopes, Fred Green, Fred Chandler, and others. These, if grown naturally, would probably not produce a fully developed bloom till the end of November. Such varieties should be rooted early, say, the end of November, and every encouragement given to them to



FIG. 2.—Selecting the Crown Bud. A, B, and C show where the shoots should be pinched

(From the *Gardeners' Chronicle*)

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make good strong plants which may be stopped either in April or early in May, according to the requirements of the individual varieties.

There are, of course, many varieties that come into bloom each season at about the right time, and consequently require no manipulation at all, and though I have outlined my method of what may be termed timing the flower, I would never recommend stopping the plants unless it is found by trial that the flowers will not come at the right time without such stopping. It is worse than useless to give specific dates for certain varieties, for conditions vary so much even in a few miles that what might suit one place, or one man's treatment, would be altogether wrong at another; but sufficient has been said to show that by careful study and by jotting down the dates of the natural break, the appearance of the crown bud, and the length of time it takes to develop properly, a great deal can be done towards getting good flowers at a given date, and this is especially necessary where only a limited number of plants are grown for the purposes of exhibition.

The "terminal" buds are flower buds that terminate the growth of particular shoots, and are seldom made use of in exhibition culture owing to the smaller size of the flowers. At the same time, flowers produced by terminal buds are usually characterised by high development of colour and general refinement.

The term "taking" the bud in common use amongst Chrysanthemum growers really means "selecting" the bud for cultivation, and removing all other flower buds in order that the one which is retained may develop to the highest degree possible. The uninitiated, therefore,

must interpret the word "taking" as meaning "choosing," not suggestive in the least of "removing," for the bud "taken" is the only flower bud "left" on the shoot.

HOUSING AND SUBSEQUENT TREATMENT

All the plants should be placed indoors not later than the end of September, but some time before that date certain of the earlier varieties begin to expand their florets and these must be placed under cover at once. At one time I thought that by leaving the plants out of doors as long as possible the opening would be retarded, but this is *not* the case; therefore, as heavy rains or damp nights are apt to damage the florets, it is a great advantage to remove the plants indoors immediately the flower buds show colour.

A good lofty and well-ventilated house should be chosen for the plants, one in which there is sufficient head room without having the flower buds within 3 feet of the roof glass, for the reason that the fluctuations of temperature near to the glass are liable to cause damping of the florets.

The plants ought not to be placed closely together. For a few days after housing all the air possible must be admitted so as not to cause the plants a severe check as a result of transferring them from the open air. Watering must be given careful attention, affording a fair amount at this time, as it must be borne in mind that the atmosphere in the house is less damp than out of doors and transpiration from the leaves is greater in proportion.

Feeding must be continued for a week or two, on the system practised out of doors, but as the flowers open,

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reduce the strength of the manure water until clear water only is employed. The late plants may be given a few applications after the earlier ones are receiving merely clear water.

No rule can be laid down as to the temperature of the Chrysanthemum house, but as the flowers begin to unfold their florets fire heat is necessary to maintain a dry atmosphere and to keep it in circulation. A certain amount of ventilation must be given at all times—night and day—varying this according to the state of the weather, but care must be exercised to prevent cold draughts through the house, these being a fruitful cause of damping. The front ventilators must only be used during bright, dry, and not too cold weather. When the flowers happen to be near the top ventilators, it may be necessary to stretch a piece of light tiffany above them during wet or foggy weather to prevent the moisture blowing in on them, or this again may cause damping of the florets.

Opinions are divided as to whether the flowers should be shaded or not. When the plants are placed in large houses the need for shading is not so great as in smaller structures, but sudden increases of temperature are apt to cause scalding of the florets even if there is plenty of ventilation, and in such a case shading must be employed; not a heavy shade, however, but just sufficient to break the full glare of the sun, removing the material immediately the sun loses its power in the afternoon. As the dark coloured varieties are most susceptible to scorching, it is convenient to place them near together where they can be especially looked after in this respect. By careful firing, ventilating, shading, and watering, the most difficult varieties may be induced to open their flowers

perfectly and without losing their long guard florets which add so greatly to the depth and to the good appearance of the flower. Provided too much heat is not used during the time the florets are expanding, the flowers should keep well for some few days after they are fully out, a very dry room with little variation in the temperature being probably the best place in which to try and keep them.

DWARF PLANTS FOR DECORATIVE PURPOSES

Many of the Japanese varieties are particularly well adapted for growing as dwarf, single-stemmed plants for grouping in the conservatory or at exhibitions.

For this purpose healthy stock plants should be selected some time in December, removing all the growths that have attained any considerable length and cutting them to the soil level. These plants should be kept in a cool house or pit during the winter, and by March or early in April the growths should be in a suitable condition for providing cuttings. At this season I prefer to strike the cuttings in shallow boxes, placing them in a house or pit where there is sufficient heat and moisture. Here they soon make roots and are then hardened off before the young plants have made much growth.

The rooted cuttings are first potted into 60-size (3-inch pots) and placed in an unheated frame which is kept close for a few days following the potting. If especially dwarf plants are desired, as soon as rooted in the 60-size pots the points of the shoots should be removed; this checks the growths somewhat, but by a judicious use of the syringe and sufficient warmth in the pit to keep the plants from

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getting hard they soon break again and a more liberal amount of air may be given, disbudding the shoots to one. As soon as the plants are well rooted in the 60-size pots they require a shift into 48-size (5-inch) pots, and if the weather conditions are not good they may be again returned to the frame for a few days, but as the sun by this time is very powerful no attempt must be made to keep the frame closed, and the more genial atmosphere will allow the free use of the syringe. This keeps the foliage from flagging until roots begin to spread into the fresh soil. As soon as fit the plants may be removed to the open air and receive similar treatment to those rooted at an earlier period.

Growth being rapid at this season, it will not be long before they are ready for potting into their flowering pots, large 32-size and 24-size (6-inch and 8-inch pots) being the best. The same mixture of soil suits these as recommended for the main batch of Japanese varieties and the potting must be done firmly, leaving a small amount of space for accommodating a top-dressing.

The general rules of cultivation laid down for the earlier rooted plants apply equally to these dwarf plants, but it may be found as the pots get filled with roots that plants in these small pots will require more water, and possibly may need looking over a little oftener to prevent loss of leaves through drought. Many of these plants rooted in March or early April will probably make a natural break at about the right time for the first-crown bud to be taken in the second or third week in August, but if they do not, then stop them at the end of the second week in June, or even the very quick opening varieties a few days later than this, as generally speaking these late struck plants do

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not produce quite such heavy flowers and so are a little quicker in opening.

The plants that were stopped whilst in 3-inch pots to keep them dwarf will not make a natural break before the first-crown bud and so all, or most of them, must be again stopped to time the bud, this being done as advised in the previous paragraph, and if they have made good progress they may be pinched back three or four inches, this, of course, with a further view to dwarfing them.

All the dwarfer-growing Japanese varieties are suitable for this system of cultivation. Indeed there are very few, except the tall varieties such as Duchess of Sutherland and Reginald Vallis, that are not capable of producing good blooms by this system. A grower who adopts this method for the first time may not perfectly realise his ideal, but he will at least discover the little points necessary to ensure success in the following season, and I might add many of my best flowers, especially of new varieties, have been cut from plants grown in this manner.

Where varieties come into favour so quickly and just as quickly are superseded, it is not necessary to give lists for various purposes, but as this chapter on the Japanese section might appear incomplete without one, the following list is furnished. It includes the best forty-eight varieties up to 1912, those seen for the first time in 1911 being yet to prove.

Those marked * are especially suitable for single-stemmed plants.

Mrs. A. T. Miller, *pure white*.

*White Queen, *creamy white*.

*Evangeline, *white, tinted with pink*.

*Miss A. Nicol, *white, tinted with mauve*.

*Mrs. Gilbert Drabble, *white, with greenish centre*.

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*William Turner, *pure white*.

Mrs. G. C. Kelly, *claret purple, with silver reverse*.

Mrs. R. A. Witty, *deep terra-cotta*.

Harry Wood, *crimson*.

King George V., *deep crimson*.

*Master James, *crimson*.

*Mrs. R. Luxford, *Indian red*.

G. J. Bruzard, *rich wine red*.

Master David, *bright crimson, with golden reverse*.

*Pockett's Crimson, *deep crimson, with golden reverse*.

*Mrs. L. Thorn, *canary yellow*.

*F. S. Vallis, *canary yellow*.

*The Hon. Mrs. Lopes, *yellow*.

*Bessie Godfrey, *yellow*.

*Mdme. G. Rivol, *pale yellow, shaded with buff and pink*.

*D. B. Crane, *bright yellow*.

*Countess Granard, *yellow*.

Algernon Davis, *bronzy yellow*.

Lady Crisp, *bronzy yellow*.

*Lady Talbot, *primrose*.

Duchess of Sutherland, *bright yellow*.

*Queenie Chandler, *primrose*.

*Mrs. W. Knox, *yellow*.

*Kara Dow, *bright bronze, with golden reverse*.

*H. E. Converse, *bronze and buff*.

*Rose Pockett, *old gold*.

Eclipse, *reddish crimson*.

Reginald Vallis, *bright amaranth*.

*Frances Jolliffe, *pale yellow, with rose streak*.

James Lock, *bright bronze*.

Marie Loomes, *chestnut*.

Mrs. H. D. Thornton, *cream, tinted with rose*.

*Mdme. Paolo Radaelli, *white, shaded with rose*.

*Captain Mitford, *amaranth, shaded with carmine*.

*John Peed, *white, tinted with pink*.

W. Gee, *mauve pink*.

Mrs. A. S. Bott, *buff*.

December Gold, *golden yellow*.

White Australia, *white*.

*Lady Frances Ryder, *pure white*.

*Alice Lemon, *clear mauve pink*.

*Mrs. G. Mileham, *silvery mauve*.

*Walter Jinks, *deep purplish pink*.

Frank Payne, *pale mauve*.

Edith Jameson, *pink, or mauve pink*.

CHAPTER V

INCURVED CHRYSANTHEMUMS

THE Incurved, or Chinese, Chrysanthemums furnish a good test of the skill and patience of the cultivator. My first experience with Incurved Chrysanthemums was gained about the time when Messrs. C. Gibson, H. Shoesmith, J. Doughty, W. H. Lees, W. Mease, and W. and G. Drover were amongst the principal exhibitors, and Messrs. Drover produced flowers which in build and finish have seldom been surpassed. During the last fourteen years or so the general cultivation of this type of flower has decreased, though there have been some pretty keen struggles for the Holmes Memorial Challenge Cup at the National Society's show between Messrs. W. Higgs, W. Mease, and G. Hunt, Mr. Higgs proving the winner for a period of twelve years in succession, and since these successes Messrs. Mease and Hunt have each won it once.

In the matter of varieties great changes have taken place. In the earlier times there were three leading groups, the largest flowers belonging to Queen of England and the varieties obtained as sports from it. The medium sized blooms were represented by the light pink variety Princess of Wales and its sports; and lastly, Princess of Teck with its varieties made up our smaller specimens. Although there were certain other varieties, such as the Rundle family, in existence, the three types

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mentioned above usually made up quite three parts of the stands in competitions. These excellent types have almost died out and present-day favourites are possibly a trifle larger, a little more varied in colour, but hardly so refined in appearance, this being due to the Japanese blood introduced in the cross-breeding. One result of this intermixing of types is that the flowers require a great deal of dressing before they are fit for the exhibition table.

CULTIVATION OF INCURVED VARIETIES

The principles of cultivation have been pretty fully dealt with in the chapter on Japanese varieties, and I do not propose to go over the whole ground again. It may be mentioned, however, that the great majority of Incurved varieties produce the most refined blooms from second-crown buds, therefore an early start is desirable, putting the cuttings in during November so that early plants will be obtained and the second-crown buds come right for the exhibitions.

In regard to the compost, this should differ from that recommended for the Japanese varieties, and though a certain amount of manure is desirable for the latter type, the Incurved varieties generally require none.

The reader has already noted that there is a certain amount of Japanese blood in present-day Incurved varieties, and that being so, cultivators must use their best endeavours to make it as little apparent as possible by providing a rooting medium not rich in manures but which is likely to promote the formation of numerous fine roots, and wood of firm medium strength, rather than of a gross nature, the

PLATE VI

PERCY ARNOLD

(One of the best single varieties for decorative purposes)



1944



Therese Halkey

CULTIVATION OF INCURVEDS 75

former roots generally giving a closely built, solid flower, so much admired in the Incurved type.

The finest flowers I ever saw were grown in turf only cut from the meadow about a month or so before it was used for the final potting; but it is not often that turf of such excellent quality can be obtained, and cultivators must content themselves with the best procurable.

Yellow, fibrous loam of a fairly heavy nature should form the basis of the compost, adding leaf mould, road grit or silver sand, and a little wood ashes, this compost being sifted for the earlier pottings, though for the later or final potting it should be broken up as advised for the Japanese, adding a little mortar rubble, broken oyster shells, and bone meal, and leaving out a portion of the leaf mould if the nature of the loam renders this desirable.

The young plants should be potted on as they require it, the same system being followed as advised for the Japanese, but care must be taken not to over-pot or to over-water them, and it may be necessary to give the weaker-growing plants a size smaller pot than the others, this applying also at the final potting, when pots of 9 to 10 inches in diameter may be used. Many people favour the use of crushed bones in place of small crocks, but so many failures have occurred through the use of insufficiently cleaned, or I may say too fresh bones, that I strongly deprecate the use of them (except as bone meal or flour mixed in the soil), good clean crocks being preferable. These should be covered with the fibrous portions of the loam, which will keep the plants well drained in the wettest of seasons.

THE FINAL POTTING

The final potting should be carried out before the end of May, thus ensuring a long season of growth in the flowering pots, and the potting must be done very firmly.

When the final potting takes place, the plants should be stood closely together as advised for the Japanese, keeping them well sprayed overhead for a few days, and watering in before the plants become too dry at the ball, keeping them in this position till the roots are extending freely in the new soil. When standing them out in their permanent positions, the Incurved varieties should be kept to themselves as they do not require the same amount of feeding as the Japanese varieties. The pots should be stood well apart, but as the foliage is not usually so large and spreading, rather less room will suffice than for the Japanese.

For some time after potting the plants will only require a moderate quantity of water, but their needs must be ascertained by gently tapping, and the soil should receive a thorough soaking when dry and not a surface sprinkling only. As the season advances and the plants become larger a corresponding increase in the water supply will be necessary, and the plants must be examined for this purpose twice a day, syringing them in the morning and afternoon on all fine days.

As soon as they make their first natural break, which will be about the time they are removed out of doors, the grower must decide how many shoots or blooms each plant is to be allowed to develop, and for this purpose the varieties may be conveniently divided into two groups, the true Incurved varieties, and those with

Japanese characteristics: the former may be recognised by their comparatively fine, hard wood, and in the case of these the number of the blooms may be confined to three, good examples being C. H. Curtis, Duchess of Fife, J. Wynn, Le Peyron, Mrs. G. Denyer, Nellie Southam, Romance, and W. Pascoe. In the case of other varieties which are stronger growers and in the larger pots, there are likely to be better results if each plant is allowed to carry four flowers.

As soon as the required number of growths are sufficiently advanced all others should be pinched off, tying the selected shoots to the stake or stakes and continuing this as the growths require it, remembering that the young shoots if left loose are easily broken off by strong winds or heavy rains.

SELECTION OF BUDS

Certain varieties give good blooms from first-crown buds, namely, such fairly late varieties as Duchess of Fife, C. H. Curtis, Edwin Thorpe, Frank Trestian, Mrs. J. Judson, Mrs. J. Wynn, and late plants of Buttercup. These varieties in ordinary cultivation rarely produce their first-crown buds till about the second week in August, when they may be secured and all the side buds rubbed out as shown in Fig. 2. The great majority of varieties come best from natural second-crown buds, the first crown appearing during the last fortnight in July, and so the central bud must be rubbed out and one of the side shoots grown on again which, in ordinary circumstances, should again produce a bud about the last week in August or early in September.

FEEDING

As already intimated, this class of *Chrysanthemum* must not be overfed, especially with artificial manures, this tending to coarseness in the florets and a general faultiness in shape. Still, by the end of July something must be done to keep the plants in full health and vigour, and it must be borne in mind that the truer types of *Incurved*—the ones probably in the smallest pots—will take more feeding than the rougher, or half Japanese, *Incurved*. Weak soot water and that made from cow or sheep manure are excellent stimulants, and if given often and in strength just sufficient to nicely colour the water, we get just what is needed, taking care to renew the manure in the tub every week or ten days. There is nothing to be said against a light sprinkling of some approved fertiliser after the plants get thoroughly well rooted. This may be applied in the dry state or used in the form of a light top-dressing as advised for the Japanese, though it must be used in more moderate quantities. These top-dressings encourage the multiplication of surface roots and keep them supplied with nourishment.

HOUSING INCURVED VARIETIES

As with the Japanese varieties the plants must be left in the open air as long as there is no danger from frost; the last week in September is a good time for housing in most localities, but in a cold district they may have to be put in a week earlier. It has been the custom with some cultivators to untie the plants and

train them immediately under the glass when inside, for the purpose of getting the blooms to hang down—this, so it is thought, tends to a better shape. But I hold that as it makes the flower stem curl there is a difficulty when the blooms are cut for exhibition, even cupping being very difficult to manage after training in this manner. I favour therefore a perfectly upright position for the flowers.

The Incurved varieties generally do not like much fire heat, this tending to reflex the florets in many varieties. They will expand very well in a temperature of about 50°, and plenty of air without cold draughts must be admitted on all favourable occasions.

DRESSING THE FLOWERS

When Incurved blooms are to be exhibited, considerable attention must be given to them during the time they are expanding. Formerly this dressing was done after the blooms were cut, but by far the better plan is to see to it while the blooms are developing on the plant. Tweezers (preferably steel) may be obtained from any Chrysanthemum specialist for the purpose of pulling out all the small and badly formed florets that would prevent the other florets developing properly or falling in their natural position in the flower.

This little matter must be commenced when the blooms are about half open, going over the flowers every two or three days, but it is necessary to be very light in the touch, as a clumsy performer may soon spoil many flowers by bruising the florets. When about three parts open extra pains should be taken with the centre of

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the bloom. Here very often the florets are unduly crowded and if left, instead of all turning towards the centre, they will throw out in all directions, therefore about half an inch of the centre of the bloom may, in many instances, be pulled out to advantage. Thus room is given for proper development and the florets will incurve towards the centre.

An Incurved flower must be fully developed to be perfect and the centre brought up to a point, or to such a level, that the top of the flower is more or less rounded. Too often this class is exhibited not properly open and therefore imperfect, and rarely are first-rate exhibits seen earlier than November 10th. The work of dressing cannot be done in a hurry and, as mentioned before, lightness of touch is essential. The finishing touches must be done after the bloom is cut, but if the preliminary dressing has been carefully carried out, there is little more to do than just to arrange the florets in their proper order by means of a pair of very light tweezers or an ivory shuttler.

SELECTION OF VARIETIES

The following is a list of present-day varieties, and where only a small collection is desired, those marked * should be chosen :

*Buttercup, *rich, dark yellow*.
Calypso, *reddish bronze*.
*Charles H. Curtis, *yellow*.
Clara Wells, *rich cream*.
Daisy Southam, *deep yellow*.
*Duchess of Fife, *white*.
*Edwin Thorp, *white*.

*Emblème Poitevin, *yellow*.
*Frank Trestian, *fawn*.
Godfrey's Eclipse, *yellow*.
*Golden King, *rich yellow*.
*H. W. Thorp, *white*.
John Wainwright, *bronze*.
J. Wynn, *light pink*.

*Lady Isabel, *silvery pink*.

Le Peyrou, *yellow*.

Ma Perfection, *white*.

May Phillips, *light bronze*.

Mrs. Bernard Hankey, *a shade of mahogany*.

*Mrs. F. Ashworth, *light buff*.

Mrs. F. Judson, *white*.

*Mrs. G. Denyer, *silvery pink*.

Mrs. J. Wynn, *blush*.

Nellie Southam, *deep lilac*.

Pantia Ralli, *light bronze*.

*Romance, *deep yellow*.

Topaze Orientale, *primrose*.

William Biddle, *bronze*.

W. Pascoe, *light pink*.

CHAPTER VI

DECORATIVE CHRYSANTHEMUMS

I SHALL include under this heading the Single-flowered varieties, Japanese, and certain varieties of the Incurved type that have small and medium sized flowers, also any other varieties that may be grown for use either as cut flowers, or as pot plants for conservatory decoration.

Until recent years the Incurved, Japanese, Pompon, Anemone Pompon, and Reflexed varieties were chiefly employed for decoration, but during the last ten years a great change has taken place, the Single varieties having in very many private places entirely superseded the other types, this, no doubt, because of their light and graceful appearance. For market purposes the Singles are grown fairly extensively, but it cannot be said that they are likely to supersede the Japanese for market purposes; in the first place, because they do not pack so well, and secondly, because they do not last as long in water, two very essential qualities for the market grower.

It might be said that in every garden containing a

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greenhouse decorative Chrysanthemums are grown in larger or smaller numbers, and, like other plants of easy culture, they are not always accorded the time and attention necessary to get the best results. But let it be recognised that decorative Chrysanthemums pay for good cultivation, for with liberal treatment during the growing season and a fair amount of light and air during the period of opening, each plant will yield a large number of flowers that will last a considerable time either on the plants or when cut and placed in water.

PROPAGATION OF DECORATIVE CHRYSANTHEMUMS

Propagation may be carried on at any time between January and the end of March. If numbers of one variety are required, the easiest method is to strike the cuttings in boxes about 2 inches in depth. Potting off into 2½-inch pots should be commenced as soon as the cuttings are rooted, a further shift into 5-inch pots being given as soon as the roots reach the sides of the pots, transferring them later into the flowering pots in the early part of June. The composts already described should be used in the different stages of potting, this operation being done very firmly each time.

When once the plants are established in 3-inch pots, they should be treated as hardy as possible, the aim being to promote a sturdy growth from the outset and right through the season. A fair amount of room must be allowed between the plants when in the frames and also in the open air, both before and after the final potting. As with the Japanese and Incurveds, so the Decorative

plants on being placed out of doors in their summer quarters should be provided with stakes without delay, and if it can be arranged the plants should be stood in rows and the top of each stake tied to a wire. So long as the plants keep pretty strong nothing in the way of manure is necessary, but immediately any sign of weakness shows itself either in the wood or foliage a mild stimulant must be given, but I very rarely find that anything is needed except soot water till the end of August, when liquid manure made from cow or sheep droppings may be given two or three times a week. When flower buds have formed the manure water may be increased, or a light application of artificial manure may be given once a week, but this must not be overdone, or there will not be that stiffness in the flower stems so necessary for their proper display.

It is a common practice to pinch the Single and Decorative varieties once or twice during the season to encourage a bushy habit of growth, and when pinching is to be practised, the young plants should be pinched the first time when they are nicely established in the 3-inch pots, giving them a second or even a third pinching as they make growth, but the last pinching should take place before the second week in June.

I am not in favour of stopping or pinching decorative Chrysanthemums unless it is with the object of keeping the plants dwarf or to time the blooms when they are being grown as half specimens. I allow my single and decorative varieties to grow quite naturally from the time the cuttings are put in until the plants flower, and they develop into plants of a good shape and produce flowers of good quality on good hard stems, being more freely flowered than

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obtainable by any system of pinching. It must be mentioned that some of the Singles and other decorative varieties are disbudded to one flower on a stem, and in such cases good sized flowers are produced, varying in numbers from fifteen to thirty on each plant, according to the variety. There are certain varieties of tall growth that may not be suitable for this system of cultivation, but I have found that they grow very little taller than when they are stopped once, or twice, provided they are kept on the hard side all through their season of growth. The really high-class decorative flowers which are so prominently displayed in the florists' windows, such as may be termed half-specimen flowers, are usually grown from six to ten on a plant which has been stopped once—this just previous to making its first natural break. The stopping has a tendency to reduce the number of shoots in comparison to when it is allowed to break naturally ; many growers strike their plants two or three in a pot for obtaining this class of flower, thus getting three or four blooms from each plant. In some instances the first-crown bud is secured, but in others the plants are allowed to produce the second crown or even the terminal bud, in just the same way as exhibition varieties. Such plants have to be fed liberally, being in rather small pots, and it is astonishing the number of high-class blooms that a plant growing in a 9-inch pot will produce, many of them being only slightly smaller than exhibition size. In this connection it should be remembered that the houses of the market growers are more adapted for favouring the development of the flowers than the smaller houses of the private establishment, hence the excellent quality frequently to be seen in many of these high-grade market flowers.

There are hundreds of varieties of *Chrysanthemums*

DECORATIVE VARIETIES 85

suitable for cultivation as decorative plants or flowers, and every reader will be able to add one or two that he thinks better than some which I include in the following list. At the same time some of our best growers of decorative Chrysanthemums have been kind enough to revise my list, and this fact gives me confidence that every variety will give satisfaction. On another page is given a list of varieties for flowering out of doors, consequently I now enumerate those for October and later :—

OCTOBER VARIETIES

Market Red, <i>bright red with golden reverse.</i>	Mrs. W. Roots, <i>white.</i>
October Gold, <i>golden yellow.</i>	Soleil d'Octobre, <i>yellow.</i>
Mrs. McNiece, <i>pink.</i>	Redman, <i>bright red.</i>
Bronze Mrs. McNiece, <i>bronze.</i>	Emperor, <i>crimson scarlet.</i>
Eskimo, <i>cream.</i>	Virginia, <i>white.</i>
Mrs. R. Luxford, <i>Indian red.</i>	Source d'Or, <i>old gold.</i>
Captain Julyan, <i>primrose yellow.</i>	Lizzie Adcock, <i>yellow.</i>
	White Queen, <i>white.</i>

NOVEMBER VARIETIES

David Ingamels, <i>deep golden yellow.</i>	Foxhunter, <i>bright chestnut.</i>
Freda Bedford, <i>bronzy orange.</i>	Mrs. R. Hooper Pearson, <i>bright, bronzy yellow.</i>
H. W. Thorpe, <i>white, with cream centre.</i>	Silver Tip, <i>deep rose, tipped white.</i>
Thomas Page, <i>silvery pink.</i>	Mrs. Greenfield, <i>bright yellow.</i>
Rayonnante, <i>pink.</i>	Buttercup, <i>bright yellow.</i>
Cannell's Prolific, <i>white.</i>	Ethel Thorpe, <i>silvery pink.</i>
R. F. Felton (for colour), <i>rich yellow.</i>	Mrs. A. T. Miller, <i>white.</i>
Moneymaker, <i>white.</i>	Western King, <i>white.</i>
	W. Duckham, <i>pink.</i>

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DECEMBER AND LATER

Baldock's Crimson, *crimson*.
Princess Victoria, *creamy white*.
Yellow Princess Victoria, *pale yellow*.
Pink Princess Victoria, *pink*.
Bronze Princess Victoria, *bronze*.
Mrs. J. Thompson, *white*.
Lady Carmichael, *white*.
Mrs. D. Symes, *white*.
Mrs. H. Turner, *rich, velvety crimson*.
Mrs. J. Hygate, *white*.
Yellow Mrs. J. Hygate, *yellow*.

A. J. Balfour, *mauve pink*.
Bronze A. J. Balfour, *bronze*.
Winter Cheer, *deep pink*.
December Gold, *deep golden yellow*.
True Gold, *very clear bright yellow*.
Thorp's Xmas Rose, *rose pink*.
Mrs. J. W. Crossley, *crimson and yellow*.
Lady Belper, *white*.
Heston White, *white*.

SINGLE FLOWERED VARIETIES

Brightness, *bright red*.
Bronze Edith Pagram, *bronze*.
Ceddie Mason, *bright crimson*.
Connie Fownes, *white*.
Celia, *yellow*.
Canary-bird, *pale yellow*.
Crimson Beauty, *crimson*.
Charles Kingsley, *golden yellow*.
Charles Dickens, *golden yellow*.
Cinnamon, *cinnamon or bright buff*.
Dorothy Dann, *terra-cotta*.
Edith Pagram, *mauve pink*.
Hubert Williams, *pink*.
Hilda Lawrence, *blush pink*.
Josephine, *deep yellow*.

Mrs. W. Higgs, *pale pink*.
Marjorie Lloyd, *golden bronze*.
Miss Margaret Grey, *cinnamon*.
Mrs. F. C. Hunter, *bright yellow*.
Mensa, *white*.
Mrs. Patching, *bronze*.
Mrs. W. G. Garner (imp. Bronze Pagram), *bright bronze*.
Mrs. Buckingham, *salmon pink*.
Mary Richardson, *bright terra-cotta*.
Metta, *magenta (white zone)*.
Miss May Thorne, *pale pink*.
Merstham Jewel, *reddish bronze or terra-cotta*.
Phyllis Bryant, *yellow*.

Picta, *pink*.

Robert Milner, *bright yellow*.

Sylvia Slade, *bright purple lake*
(*white zone*).

Snowflake, *white*.

White Edith Pagram, *white*.

Kathleen May, *deep crimson*.

DWARF PLANTS FOR DECORATION

During the past few seasons we have seen at the shows some excellent examples of dwarf Chrysanthemums and they have been much sought after and admired. Such plants require very careful cultivation.

In the first place suitable varieties must be chosen and the stock plants well looked after during the winter and spring months.

In no case must the cuttings be propagated before April, and propagation may be continued till the latter end of May or early in June, the methods of striking previously advised being again followed, but taking the additional care to shade the cuttings during the hottest part of the day, the sun at this season being pretty strong. If rooted two or three in a thumb pot they may be potted on just as they are, or if in boxes, they may be potted either singly or two or three in a pot at the discretion of the grower. Very small shifts must be given at potting, transferring them from thumbs into 3-inch pots and finally potting them into 5-inch and 6-inch pots.

As soon as the cuttings have rooted the shoots must be stopped, and the earlier rooted plants may have to be pinched a second or even third time, but no pinching should be practised after the third or last week in June. The last plants should always be rooted or potted two or three in a pot, as there will be only time to pinch them

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once and there should be at least from eight to twelve shoots to each pot to furnish it nicely. In the earlier stages of growth only sufficient water to keep the plants healthy must be given, as any excess would tend to make them grow too freely; but later in the season the supply must be increased, as the roots will dry very quickly in such small pots and loss of foliage will follow a check from drought.

Little or no manure will be required until the flower buds are pushing, when the plants must be assisted in the usual way with liquid or artificial manures.

In most instances the plants should be disbudded to one flower on each stem, the extra colour and quality in the disbudded blooms making the plants more effective as decorative subjects, either in the house or conservatory.

Many of the dwarfer varieties may be grown in this manner, but the following list includes the best that I have seen :—

Kathleen Thompson, <i>chestnut,</i> <i>tipped with gold.</i>	Bronze Madame Marie Massé, <i>bronze.</i>
Caprice du Printemps, <i>rosy</i> <i>purple.</i>	Elstob Yellow, <i>bright yellow.</i>
White Caprice du Printemps, <i>white.</i>	Polly, <i>bronze yellow shading to</i> <i>chestnut.</i>
Yellow Caprice du Printemps, <i>yellow.</i>	Carrie, <i>rich yellow.</i>
Lilac Caprice du Printemps, <i>lilac.</i>	Miss D. Elliott, <i>terra-cotta.</i>
Madame Marie Massé, <i>mauve</i> <i>pink.</i>	Primrose Girl, <i>primrose.</i>
Crimson Madame Marie Massé, <i>crimson.</i>	Countess, <i>white.</i>
	Soleil d'Octobre, <i>yellow.</i>
	Bronze Soleil d'Octobre, <i>bronze.</i>

PLATE VII

YELLOW CAPRICE DU PRINTEMPS

(Represents a type of Chrysanthemum of dwarf stature. The specimen illustrated was grown by Messrs. James Veitch & Sons, and was only 18 inches in height)

THE
GALLERY



2000
2000

CHAPTER VII

ANEMONE AND POMPON CHRYSANTHEMUMS

BOTH Anemone and Pompon Chrysanthemums have been neglected in late years ; cultivators having overlooked the fact that some of the varieties possess unique qualities both as cut flowers and plants.

The Pompons, for instance, are suitable for growing into large specimen plants on account of their branching and quick-growing habit.

There may be a desire on the part of some growers to bring the large Anemone Chrysanthemums into favour again as show flowers, but, owing to the rich colours and variations in form of the Japanese and single-flowered varieties, such desire is not likely to be realised. They are certainly pretty, especially the smaller varieties known as Anemone Pompons, but the great development in the Singles in recent years will prevent the Anemones being again very widely grown.

I have dealt with Japanese and Incurved varieties for exhibition purposes and the Singles and smaller Japanese for decorative purposes. The methods of cultivation already described will suit the Anemone and Pompon Chrysanthemums and the size of pot should be determined according to the habit and strength of each variety, a 9-inch pot being quite large enough to grow the big Anemones for exhibition purposes.

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A few good varieties among the large Anemones are :—

Godfrey's Perfection (new), <i>white</i> .	Mrs. Caterer, <i>white</i> .
Delaware, <i>creamy white</i> .	Madam Heanage, <i>orange yellow</i> .
Descartes, <i>crimson</i> .	Mrs. H. M. Gardiner, <i>rose</i> .
Ernest Cooper, <i>cream</i> .	Owen's Perfection, <i>lilac, tinted with gold</i> .
Gluck, <i>deep yellow</i> .	W. W. Astor, <i>salmon blush</i> .
M. Charles Lebocqz, <i>yellow</i> .	

POMPON ANEMONES

Antonius, <i>bright yellow</i> .	Gem of Earlswood, <i>pale yellow, tinted with rose</i> .
Bessie Flight, <i>white shading to yellow</i> .	Hon. Mrs. Cubitt, <i>pale buff</i> .
Emily Rowbottom, <i>blush white</i> .	Perle, <i>rosy lilac</i> .
	Marie Stuart, <i>blush</i> .

POMPONS

Ada Vincent, <i>pink</i> .	Perle des Beautés, <i>crimson</i> .
Baby, <i>yellow</i> .	Post Arthur, <i>amaranth</i> .
Kate Mannings, <i>bronze</i> .	Primrose League, <i>primrose</i> .
Mlle. Elise Dordan, <i>silvery pink</i> .	Pygmalion, <i>deep rose</i> .
Miss G. Waterer, <i>pink</i> .	Snowdrop, <i>white</i> .
	White Baby, <i>white</i> .

MISCELLANEOUS TYPES

There are some quaint forms of Chrysanthemums that hardly come under either of the other headings, and as they are sometimes useful for vase and table decorations, I append the names of a few sorts that may be described as curiosities.

Cannell's Favourite, <i>white</i> .	White Thread, <i>white</i> .
Crimson Tangle, <i>crimson</i> .	Yellow Thread, <i>yellow</i> .
Mrs. W. Butters, <i>white</i> .	What Oh, <i>bronze</i> .
Mrs. W. Filkins, <i>pale yellow</i> .	Silk Twist, <i>bronze</i> .

CHAPTER VIII

CHRYSANTHEMUM FLOWERS FOR DECORATIONS

FOR purposes of decoration the Chrysanthemum is one of the easiest flowers to use, the stems being of such a nature that they do not require support. The flowers vary so much in size, form, and colour, that they are adaptable to every form of decoration in the home.

In the autumn months there is a great wealth of coloured foliage with which the Chrysanthemum is associated to advantage, and, in autumn, we get some of the finest floral effects of the whole year.

Many people say that the large-flowered Chrysanthemum is not decorative owing to its mop-headed appearance, but such people can never have decorated large rooms during the winter months, or they would know that it is easy to produce a striking effect with a few large blooms and suitable foliage, where a barrow load of small blooms would be ineffective if arranged with all the skill and taste in the world.

Large blooms intended for decorative purposes should be cut a few hours (twelve hours if possible) before they are to be used, stripping all or nearly all the foliage from the stem, and immersing the stems in water. Very young flowers do not usually keep the best, but fairly well matured flowers that have not commenced to decay

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should keep fresh for a period varying from a week to fourteen days, according to the light and temperature of the room in which they are placed.

Many and varied are the receptacles in which these large flowers may be used with effect. The old trumpet vases that were so much in vogue a few years ago are not so suitable as some others, unless they are placed in the corner of a room where some article of furniture hides the greater part of the long thin stem. Large, and not too gaudy, china or earthenware vases are probably as decorative and useful as anything for the purpose.

Although all the colours of one flower may usually be mixed with impunity, it is better when designing a decorative scheme to rely on two or at the most three colours, though these two or three colours may include many varieties that vary just a little in shade, and so provide pleasing gradations which are better than severe colour contrasts.

In dark rooms all the shades of bronze, terra-cotta, and even crimson are effective, if well lit up by the inclusion of some of the bright yellows and, needless to add, in such a scheme the autumn foliage, such as Beech, Oak, Liquidamber, and shrubby Spiraeas in variety, ought to play a very prominent part.

In lighter rooms where the panelling may be of pale blue, pink, pale green, or crushed strawberry, great care must be taken in the selection of the colours, but here, generally speaking, the whites, creams, pale yellows, mauves, pinks, lilacs, and other light shades may be utilised with effect, employing green foliage, such as *Asparagus Sprengeri* and *A. tenuissimus*, to mix with the flowers,

but when many white flowers are used, the addition of a little light brown foliage will provide a variety.

In dealing with smaller flowers, the floral artist should select vases of lesser size than those employed for large exhibition blooms, and light, simple arrangements are most effective, whatever the style of decoration desired. For ordinary room decoration I prefer the use of disbudded blooms, and though a trifle stiffer in appearance, this disadvantage may be remedied by a proper use of ornamental foliage.

Amongst the single flowers are many varieties such as Mary Anderson, Mary Richardson, and Connie Fownes that are not improved by disbudding, though when grown as sprays they are delightful. In all other cases the Single varieties should be disbudded. Many of the true Pompons are also very decorative, especially when used in conjunction with some of the other types of flowers, Snowdrop and Primrose League being two of the best for using late in the season. I have mixed those two varieties many times with disbudded blooms of Alice Byron and Maude Jefferies, and though it is only a White and Primrose scheme, it never fails to please.

The Incurved flowers are naturally rather stiffer in appearance than those already noticed, but they may be used with much effect in corridors and at the top of staircases, where such flowers are not out of keeping with the surroundings.

The decorative use of Chrysanthemums as plants extends from late September to January or even later. Whether they are grown as bush plants, specimen plants with two or three large flowers on a plant, or

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as single-stemmed plants in small pots, they may be employed in the furnishing scheme in the show house.

As plants for the dwelling house they are also very serviceable, and fairly large specimen plants trained as bushes may be utilised where large vases require filling. Single-flowered varieties grown without stopping or disbudding are useful for this purpose, and when lightly tied to one stake only, they hang gracefully and are less stiff looking than other types. Well-grown Chrysanthemums in 6-inch or even 5-inch pots may be utilised in many ways during the early part of the season before severe frosts set in, being amongst the best subjects for furnishing boxes either in the windows or balconies of town houses. Sufficient has been said to show how great a part the Chrysanthemum plays in brightening our gardens and houses during winter.

CHAPTER IX

CHRYSANTHEMUM EXHIBITIONS

PROBABLY no plant is cultivated more commonly for exhibition than the Chrysanthemum, and though other plants are displayed at the autumn shows, the Chrysanthemum predominates and gives its name to the exhibitions.

The question has been raised as to the declining popularity of the shows, but if a few shows are losing appreciation, others are gaining in the popular favour. Likewise where one type of flower appears to be declining

in the public estimation, the other types are being grown in larger quantities, and there is little fear of the exhibition *Chrysanthemum* losing ground for many years to come.

Another question that is raised from time to time is the advisability of introducing new classes at the shows. For some time past we have seen the large Japanese blooms exhibited in vases, three or five of one variety in a vase, and though they look somewhat less formal than the older method of exhibiting on boards the present system has restricted competition, the prizes offered in a great many instances being insufficiently valuable to compensate for the outlay in purchasing new boxes and in conveying them from place to place. Further, the quality of the flowers displayed in the vases is not equal to those shown on boards. There may be here and there a show where the vase class is extra good in quality, but these are exceptions to the rule.

Well set up flowers in vases look well and often give one the impression that they are better and larger than they really are. The award for the best bloom in the show is frequently given for a flower exhibited in a vase class, but if it is compared carefully with the best bloom on the boards it rarely stands the test. Though the flowers are close together on the boards the judging can be done more accurately than in any other form of exhibiting.

A very pleasing class is one for twelve blooms, to be arranged in either a vase or basket with any suitable foliage. Such a class usually produces good competition, and whether the flowers used are one, two, or several varieties, many striking arrangements are to be seen. In such a class the autumn foliage already alluded to in the previous chapter will help considerably, and those who

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are able to make a selection from the indoor foliage plants have a double string to their bow, there being many strong-growing ferns, *Asparagus*, *Codiaeums*, *Acalyphas*, small leaved *Dracaenas* (such as *D. Godseffiana* and *D. Sanderiana*), *Phyllanthus nivosus* and *P. atropurpureus*, which are eminently suitable for introducing into such a class as this. A common fault is that of using vases which are too small, the result being that the blooms are crowded in a manner that destroys the effect. Another class which often produces a good competition is one for eighteen blooms, distinct varieties, arranged on a space of 5 feet by 3 feet at the exhibitor's option (but boards must not be used). Such a class allows plenty of scope to the exhibitor, especially to one who lives in the district, as plants in addition to cut foliage may be used. In this case it is not really necessary to have flowers with very long stems, as with suitable vases the flowers may be raised to a considerable height without having to take a great packing case to accommodate eighteen flowers possessing long stems.

Either of the above classes might be modified or enlarged, and both are preferable as decorative exhibits to the ordinary vase classes.

The Singles and decorative varieties are being shown much better than hitherto, and it would be difficult to have anything more decorative than the tables usually seen at the National Chrysanthemum Society's Show at the Crystal Palace.

In exhibiting cut flowers every endeavour should be made to stage fresh specimens, which should be as nearly developed as possible, remembering that blooms which show signs of going off at the time of cutting may be very

much worse the next day. The operation of dressing the Incurved varieties was explained in another chapter. In order to carry the flowers successfully to the exhibition after being dressed, they will require cupping fairly hard to prevent the petals getting out of place in transit, and the boxes must be very carefully handled or much harm may be done.

All long-stemmed blooms, decorative and Single varieties, should be placed in water for a few hours before travelling to ensure their coming up fresh after reaching the show and being placed in water.

The packing of flowers with long stems needs considerable care, and though they are best packed upright with the stems in water the careful packer may lay them flat in boxes, if he prefers to do so, placing a wad of wood wool or paper under each row of stems to take the weight off the flower and so prevent bruising of the florets, fixing the stems with a piece of bamboo extending from side to side of the box.

The disbudded Singles should be packed in this way, as a few florets of these, even if slightly bruised, quite mars the beauty and symmetry of the flowers.

Undisbudded sprays of either the decorative or Single varieties may easily be carried in flat boxes, and if bunched in the same way as the market growers arrange them for market they travel quite well, and if firmly fixed in the boxes cannot easily be injured.

To arrange the flowers at the show to the best advantage plenty of time must be allowed, and it is not so easy a matter, especially to a nervous individual, as the same operation would be in the privacy of his own home, there being many things to distract the attention, and possibly an

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insufficiency of elbow-room. By arriving at the show early and getting the bulk of the flowers arranged before any crush takes place, time is obtained for rectifying any little defect that is discovered.

In arranging the blooms on boards every endeavour should be made to get the stands even, both as regards weight and colour, at the same time giving due prominence to those flowers that are of special merit. Too many flowers of large size are often put in the back row of a stand, thereby spoiling the effect by overcrowding whilst the middle and front rows suffer by comparison.

In the Vase classes the flowers should be kept far enough apart from each other to allow them to be examined all round, and only sufficient ornamental foliage used to provide a good effect.

The purely Decorative classes should have special thought given to them, the whole scheme being arranged in the mind before leaving home. The exhibitor should avoid copying other exhibits and should endeavour to strike out a line for himself.

Table decorations should be simple. The flowers and foliage should be on the small side, though a few larger blooms are suitable for making a ground-work or base in a fairly large vase or bowl, provided they are relieved by the addition of smaller flowers and foliage. Too many colours should not be employed, neither too varied an assortment of foliage or fern, and every flower or piece of foliage should stand apart from its neighbour but yet give the idea that without it the whole scheme of arrangement would be spoiled.

Over-elaboration is the stumbling-block of many table decorators, many of them going over and over the tables,



PLATE VIII

DECEMBER GOLD

A "decorative" Chrysanthemum that commences to flower in
November and continues in bloom until Christmas

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APPENDIX

adding little bits of flower and foliage up to the time the judges are announced, but in many instances if they were removing all the little bits that were not required they would stand a better chance of winning the first prize.

Specimen plants are not prominent features of the exhibitions nowadays, and it is only in large gardens where there is an unlimited amount of glass that such plants can be given the necessary accommodation. At one or two exhibitions, including the exhibition at Winchester, there are classes for plants carrying not fewer than a certain number of flowers, somewhere about nine to twelve. As such plants are useful for conservatory decoration, or for furnishing half-specimen blooms for cut flower purposes, classes of this sort might well be included in many schedules where at the present time the ordinary group of, say, 10 x 6 feet or thereabouts, is the only class for plants. A well arranged group of Chrysanthemums is a thing to be admired, and it entails a great amount of work on the part of the exhibitor, who deserves better money prizes, to help pay the expenses of carting.

Groups of plants and cut flowers mixed may be made very effective and, if anything, more easily arranged than groups of plants alone. The trade exhibits at the National Chrysanthemum Society's shows are probably the finest to be seen anywhere. Exhibitors should grow their plants as well as possible by attending to their wants *personally* all through the growing season. They should study the phase of exhibiting which they intend to take up well beforehand, and never enter in more classes than they can fill with credit.

CHAPTER X

COMMON PESTS

THE pests which attack Chrysanthemums are neither numerous nor difficult to combat.

Green and Black Fly are the most persistent enemies, the young shoots being liable to an attack from these at any time during the growing season, both indoors and in the open garden.

I have never found anything more effective for killing them than dusting with tobacco powder, dusting the tips of the shoots overnight and syringing it off with clear water early next morning. This answers well where only 200 or 300 plants are grown, but where they are cultivated in large numbers a light spraying with an insecticide is quicker and equally effective. The foliage is slightly injured sometimes, even if the plants are syringed over with clean water afterwards, but if ordinary care is taken with most of the advertised insecticides they will exterminate the Aphides. In no case should the plants be allowed to get badly infested, or the foliage and young shoots will suffer deformation.

In the early stages (indoors) fumigation is sometimes practised, but this I do not advise, as the young leaves often show traces of injury even from light fumigation by the edges turning yellow, thus spoiling the look of the plants as well as checking their growth for some considerable time.

After housing in the autumn the plants will stand a fair amount of fumigation and it is wise to fumigate them at least twice, some few days after they are taken indoors, thus ensuring them against an attack of fly during the period of flowering, though with the large exhibition flowers it should be done before the blooms have opened to any appreciable extent.

Thrips.—During hot and dry weather in the summer the plants may get an attack of yellow thrip, and if the points of the shoots become stunted without any apparent cause, the cultivator may suspect the presence of this pest and provide at once for spraying the plants as for aphides, repeating the spraying at least twice on alternate evenings, thus making sure of getting rid of this small but injurious pest.

If thrips are present in considerable numbers the foliage soon appears weakly, and if the insects get into the large flower buds they often spoil the flower, this being much more noticeable in the dark varieties.

Earwigs.—These are often a great source of trouble. In the case of the bush varieties their ravages are not so noticeable, but when growing for exhibition they do a deal of damage, so steps must be taken to capture them almost as soon as the plants are placed in their summer quarters, and nothing is better for the purpose than hollow pieces of bamboo resting against the stem of the plant. These act as traps, and if the traps are blown out regularly and the earwigs killed, the pest may be kept under and no great amount of damage will result.

“Rust” (*Puccinia Hieracei*).—This fungous pest threatened at one time to prove a very great drawback to the cultivation of the Chrysanthemum, but it has not been

so prevalent during the past three or four years. As a preventive, the cuttings should be dipped in a solution of sulphide of potassium, half an ounce to a gallon of water before they are inserted, and again while they are in small pots. This will usually keep them quite clean during the early part of the season, and another spraying over the whole of the older foliage before they are housed will still



FIG. 3.—Chrysanthemum leaf affected with the rust fungus (*Puccinia Hieracii*)

(From the *Gardeners' Chronicle*)

further ensure their immunity from rust. This is the only preventive I have used, and it has kept my plants practically clean even though I have introduced to the collection plants badly infested with the fungus.

Mildew.—This is very troublesome in some districts, but if the plants are treated as advised above for rust, mildew will stand no chance of spreading, as the sulphide of potassium keeps the leaves free. The only other remedy

for mildew that I know is to sprinkle the foliage with flowers of sulphur, but as this is a longer operation and not so effective I do not recommend it. If the plants are given a fair amount of potash manure during the later stages of growth and the houses are carefully ventilated and not too much water splashed about the beds and paths, mildew should not trouble growers to any serious extent, though there are one or two varieties, such as *Mdme. G. Rivol* and *Mdme. Paolo Radaelli*, that are very susceptible to it. These plants should be given a spraying directly a trace of mildew is discovered.

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